November/1959

- *Caramelization by steam injection*
- *Starch casting methods*
- *Uses and abuses of chocolate coating*
- *Weekend special: Sesame crunch*

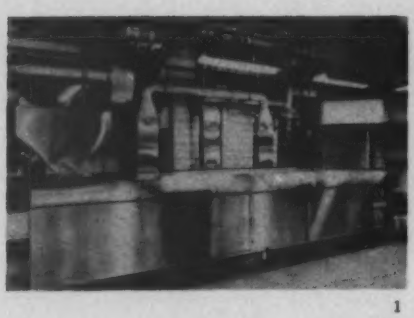
TECH[illegible] DEPARTMENT
PUBLIC LIB[illegible]
DETRO[illegible]

the Manufacturing Confectioner

specialized publication for confectionery manufacturers

WHY DOES PEANUT PRODUCTS COMPANY ADVERTISE BURNS EQUIPMENT

HERE are the pictures of the BURNS FRY-O-MATIC Continuous Oil Nut Roaster and the descriptive copy which appear in recent Peanut Products Company advertising:



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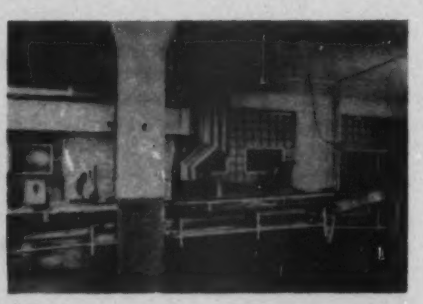

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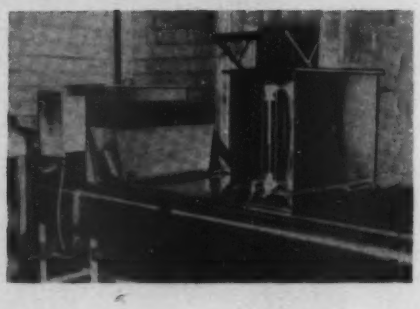


3

1-2 Stainless Steel
Continuous Oil Roaster, Salter, Glazer, Cooling

3 Stainless Steel
Automatic Salting

"Gleaming New Stainless Steel Equipment That Roasts To Perfection. Continuous automatic roasting equipment that roasts with uniformity in continuous clean oils, evenly salted, fully automatic, most modern and sanitary!"

HERE is what Peanut Products Company has experienced in the six months since they replaced six old-style batch roasters with a new BURNS FRY-O-MATIC:

- **Saved Labor**—the Fry-O-Matic required no direct labor from roaster feed to cooler discharge.
- **Improved Uniformity**—automatic controls produced uniform, consistent high-quality—hour after hour and day after day.
- **Increased Oil Life**—decreased waste and oil break-down.
- **Reduced Maintenance and Cleaning Time.**

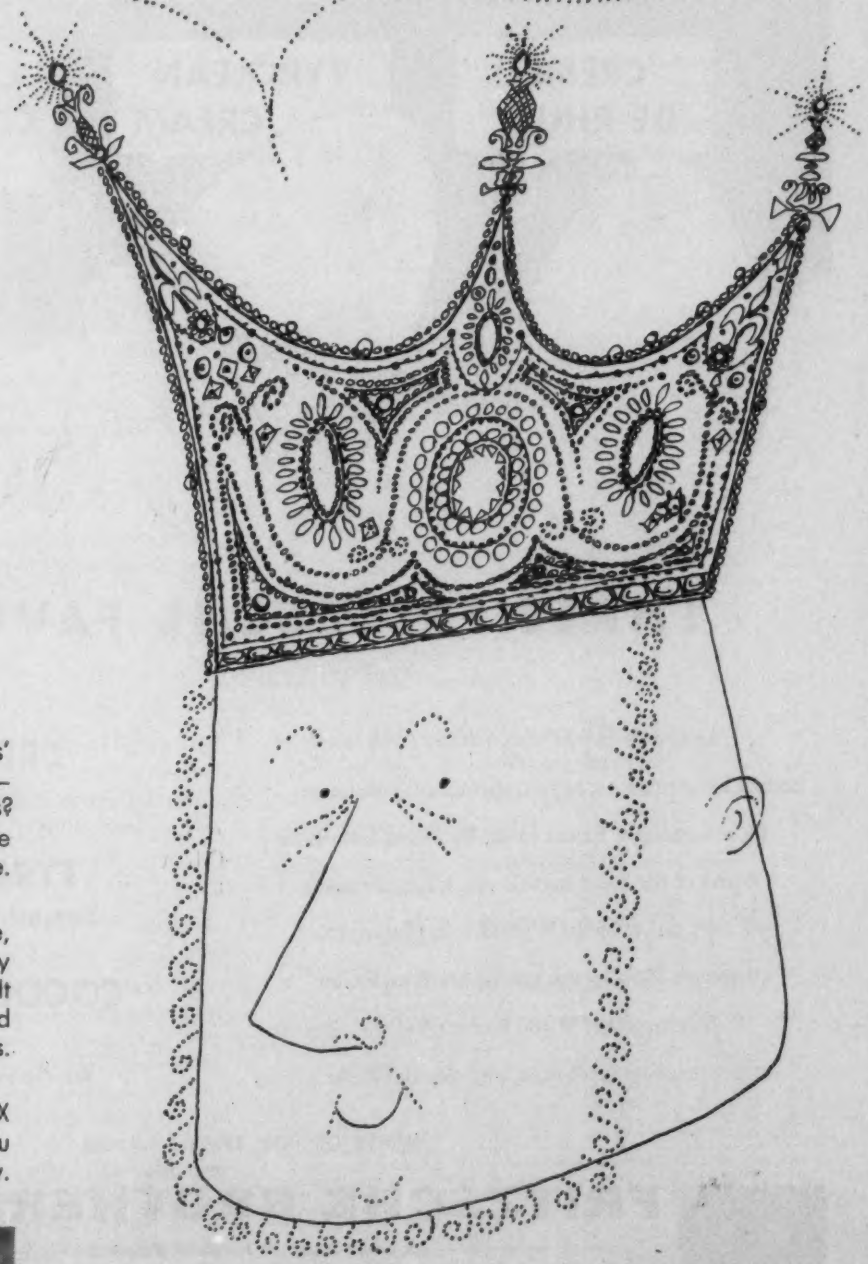
Why don't **you** profit from these important Fry-O-Matic benefits?
Call or write,

JABEZ BURNS AND SONS, INC.
ENGINEERS

NEW YORK CHICAGO
DALLAS SAN FRANCISCO

600 WEST 43rd STREET • NEW YORK 36, N.Y.

Crown Your Candies
with the Best Confectioner's Coating
made with BEST FOODS' S-70-XX
(The scientific hard butter)



Why not the best—Best Foods' exclusive Hard Butter S-70-XX—for your confectioner's coatings? Your customers will taste the *delicious* difference.

S-70-XX Hard Butter is exclusive, patented, and uniform in quality with controlled low-melt fractions. Available in desired melting points.

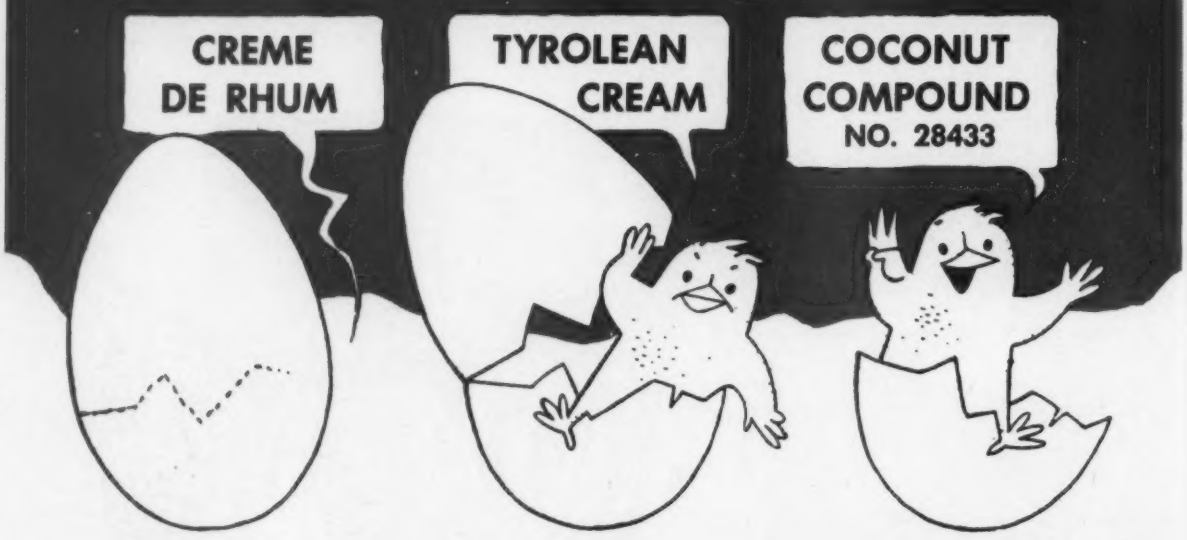
Ask your supplier for S-70-XX coatings. He can give you immediate delivery.

BEST FOODS
DIVISION
CORN PRODUCTS CO.

YOU DO BETTER WITH BEST FOODS

NEW YORK • CHICAGO • DALLAS • SAN FRANCISCO

JUST IN TIME FOR EASTER



THREE FRITZSCHE FAVORITES

. . . . Delicious flavors with a really *fresh* taste! Perfect for putting a zing into spring and a smile on those important Easter sales. Each one a balanced blend of the finest ingredients. Each one made with only one purpose in mind — to please *your* customers. So why not give yourself an Easter present NOW? If you haven't had the pleasure yet, try these three all-time, *any-time* favorites.

CREME DE RHUM
Rich and different

TYROLEAN CREAM
Smooth "sweet cream" effect

COCONUT COMPOUND
NO. 28433
As flavorful as fresh coconut

WRITE US FOR TRIAL SAMPLES

FRITZSCHE BROTHERS, Inc.

A FIRST NAME IN FLAVORS SINCE 1871

76 NINTH AVENUE NEW YORK 11, N. Y.

Branch Offices and *Stocks: Atlanta, Ga., Boston, Mass., *Chicago, Ill., Cincinnati, Ohio, Greensboro, N. C., *Los Angeles, Cal., Philadelphia, Pa., San Francisco, Cal., St. Louis, Mo., Montreal and *Toronto, Canada; *Mexico, D. F. and *Buenos Aires, Argentina. Factories: Clifton, N. J. and Buenos Aires, Argentina.

candy business

Windt made VP

Otto Windt has been named vice president in charge of research and product development for E. J. Brach & Sons, Inc. He is the immediate past president of the American Association of Candy Technologists, and received the Stroud Jordan Medal earlier this year in recognition of his work in candy technology.

Whitmans sells Almond Roca

Whitmans' central division, covering 19 Midwestern States, is the sales agent for Brown & Haley's Almond Roca candy. The other B&H products, primarily packaged chocolates, are not included.

Almond Roca has long been the leader in the B&H line and it is the only item in the line that has had national distribution. Whitmans is carrying Almond Roca in several packages, including a 3/4 ounce 10¢ bar, two sizes of boxes and two tins. (*See the story on Brown & Haley's new packages, "New faces for old favorites", in the August 1959 issue of* **The Manufacturing Confectioner.**)

Cocoa bean grind down 6.7%

United States chocolate manufacturers processed 6.7% fewer cocoa beans in the third quarter of 1959 than in the similar period of 1958. This sharp drop in grind follows a slight increase in the second quarter and indicates a nine month decline of 2.8% under the first nine months of 1958.

These figures are from the U. S. Department of Commerce on the basis of information gathered from the Chocolate Manufacturers Association and other cocoa bean processors. They do not, however, reflect any effect of the importation of semi-finished raw materials such as cocoa powder and cocoa butter.

RCSI changes name

At a special directors meeting of the Retail Candy Store Institute in New York City plans were made to take immediate action to change the official name of this public relations branch of the Associated Retail Confectioners to the Candy Institute. Unanimous approval was given to an expanded publicity program for boxed candy and a pledge to support any feasible all-industry program promoting all types of candy. The change in the Institute's name was occasioned by the participation in the program by various groups in the trade other than manufacturing retail confectioners.

Eight months sales increase 7%

An increase of 3% in sales for August, 1959 over August, 1958 leaves the figure for eight months at 7%. All of the increase was due to increases of 14% and 18% in sales of manufacturing retailers and chocolate manufacturers respectively. The largest group, manufacturing wholesalers showed no increase.

Item	Estimated sales of current month and comparison: August 1959 ($1,000)	August 1959 from August 1958	Estimated sales year to date: 8 months 1959 ($1,000)	Percent change from 8 months 1958
Confectionery and competitive chocolate products, estimated total	75,213	+3	686,591	+7
BY KIND OF BUSINESS:				
Manufacturer-wholesalers	59,719	(2)	546,873	+6
Manufacturer-retailers[1]	5,007	+14	57,548	+19
Chocolate manufacturers	10,487	+18	82,170	+4
TOTAL ESTIMATED SALES OF MANUFACTURER-WHOLESALERS BY DIVISION AND STATES				
New England	6,351	−5	58,307	+5
Middle Atlantic	17,063	−11	166,934	+8
N. Y. and N. J.	11,261	−16	100,763	+6
Pa.	5,802	+2	66,171	+11
East North Central	24,870	+6	215,363	+8
Ill.	22,247	+3	194,060	+6
Ohio and Ind.	1,807	+66	13,383	+35
Mich. and Wis.	816	+14	7,920	+1
West North Central	2,244	−9	19,847	−8
Minn., Kan., S. Dak., and Neb.	1,142	−17	12,186	−11
Iowa and Mo.	1,102	+2	7,661	−2
South Atlantic	2,916	+16	24,613	+14
Md., D. of C., Va., W. Va., N. Car., and S. Car.	1,111	+34	9,803	+27
Ga. and Fla.	1,805	+8	14,810	+7
East South Central: Ky., Tenn., Ala., and Miss.	1,007	+2	9,396	+3
West South Central: Ark., La., Okla., and Tex.	1,180	+14	15,078	+2
Mountain: Ariz., Colo., Idaho, N. Mex., and Utah	662	+19	6,188	+22
Pacific	3,426	+7	31,147	−2
Calif.	2,804	+5	25,562	−3
Wash. and Ore.	622	+17	5,585	+2

[1]Retailers with two or more outlets.
[2]Less than 0.5 percent change.

Type of product[1]	August 1959: Pounds (1,000)	August 1959: Value ($1,000)	First 8 months: Pounds (1,000)	Percent change from 1958	First 8 months: Value ($1,000)	Percent change from 1958
TOTAL SALES OF SELECTED ESTABLISHMENTS.	96,795	36,949	810,288	+1	325,390	+4
Package goods made to retail at:						
$1.00 or more per lb.	1,495	1,507	21,739	−1	25,398	+4
$.50 to $.99 per lb.	7,297	4,046	71,775	+2	39,786	+5
Less than $.50 per lb.	17,026	4,374	133,810	+6	35,209	+10
Bar goods	45,815	18,963	384,452	−1	158,299	+1
Bulk goods[2]	15,471	4,022	117,534	−2	31,816	+2
5¢ and 10¢ specialties	9,691	4,037	80,978	+8	34,882	+12

[1]A selected group of large manufacturer-wholesalers and chocolate manufacturers report sales by type of product. Companies reporting such detail account for approximately half of the total dollar sales of manufacturers.
[2]Includes penny goods.

Data from monthly "Facts for Industry" of the U. S. Department of Commerce.

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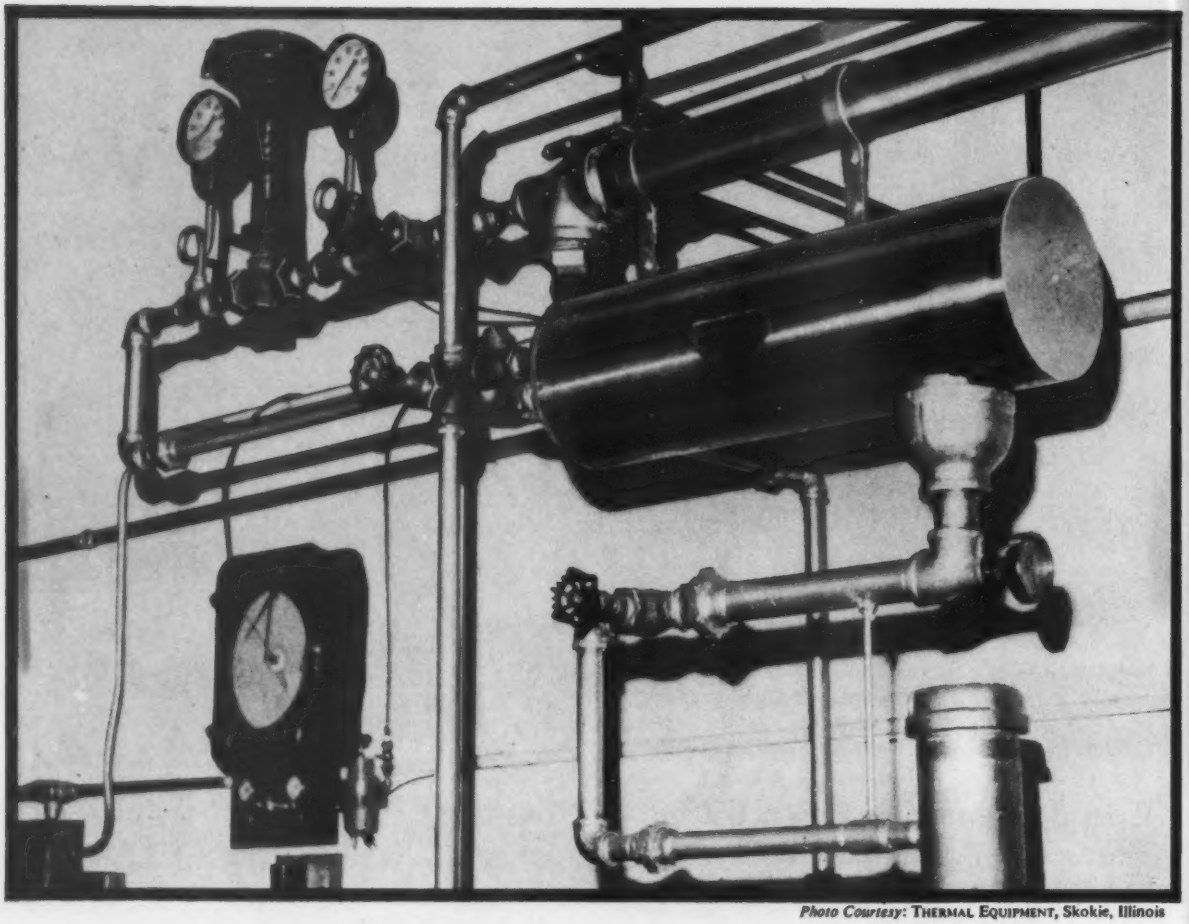


Photo Courtesy: THERMAL EQUIPMENT, Skokie, Illinois

Improve Clarity, Tenderness and Texture with

THIN BOILING STARCH

OK
BRAND
Check the advantages
of using the various types of OK BRAND Starches. Our technical experts and complete laboratory facilities are always available to work with you on any problems you might have.

Developed especially for candy manufacturers, OK BRAND Starch is made to rigid specifications in order to produce a viscosity that is "tailored" to exactly the type of candy you are making. It cooks rapidly and evenly to a thin solution which, when cast, sets rapidly to a tender-textured gel. Outstanding dependable quality, that results from over three quarters of a century of developing and producing starches, is your assurance that your products will taste better, look better—*are* better. Since there is no extra cost involved, why not use the best? The next time you order, order OK BRAND.

THE HUBINGER COMPANY

Keokuk, Iowa

NEW YORK / CHICAGO / LOS ANGELES / BOSTON / CHARLOTTE / PHILADELPHIA

West Coast promotion for Welch

The James O. Welch Company has bought one minute participations on children's television programs in five Western markets increasing by 20% last season's expenditure. Live and filmed commercials will promote Sugar Daddies, Sugar Babies and Pom Poms for 26 weeks on Cartoonarooney and Cartoon Carousel in Los Angeles, Popeye in San Diego, Roy Rogers in Portland, and Rin Tin Tin and My Friend Flicka in San Francisco.

Close Candy Company sold

The Lavazzorio Brothers, owners of Peanut Specialty Company of Chicago, have bought Close & Company from the Urban family. Frank J. Huebner has been named vice president and general manager. He was formerly with Melville Confections.

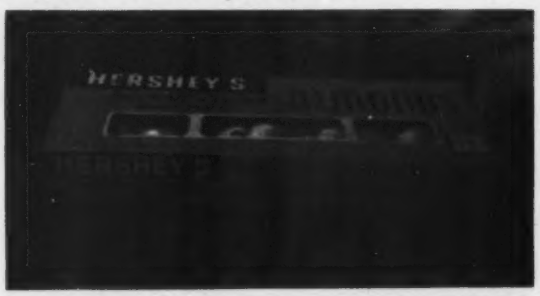
Bunte adds three in sales

Henry L. Dana has been appointed Eastern division sales manager of Bunte Bros. Chase Candy Company. He will make his headquarters in New York City. Mr. O. Dilworth has been named sales manager in the Chicago division and Mr. David Hadda has been added to the field sales force covering Michigan and Ohio.

National Licorice staff changes

Arthur J. Mackey has been elected vice president, sales and merchandising, at National Licorice Company and J. Creighton Drury has joined the company as sales manager.

New almond products



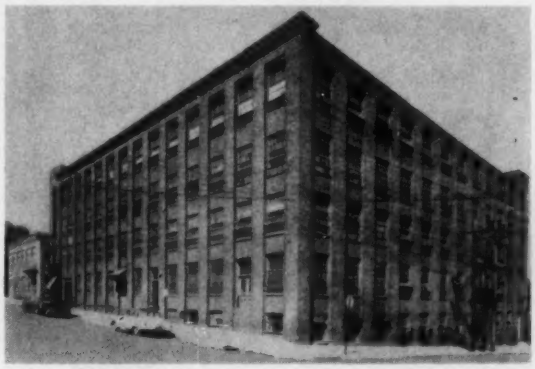
The current huge supply of almonds, with the resultant attractive prices have spawned a number of new products built around these ever-popular nuts. Hershey has introduced chocolate covered-candy coated almonds, and is selling them in a 5½ ounce window box. M&M has a similar product in a cellophane bag.

Other manufacturers are putting more sales emphasis on their almond products, such as Klein with their almond butter crunch, and the new Suchard organization with their chocolate almond bar.

Brach names marketing director

Walfred Johnson, formerly account supervisor for E. J. Brach & Sons at their advertising agency, Tatham-Laird, Inc., has been named director of marketing at Brach, effective November 1st.

Palmer in new location



This building, containing over 100,000 square feet of floor space, is the new home of R. M. Palmer Co., West Reading, Pennsylvania. An air-conditioned warehouse for finished products is contained in this building giving Palmer's greater opportunity to exert maximum control over quality of finished pieces. A full automatic continuous molding machine, 80 feet in length, has been installed to produce Palmer's line of hollow chocolate novelties. This machine is of special design and raises the production capacity of the plant by 50 percent.

Smith Bros. plant closed

Smith Brothers have closed their cough drop factory in Michigan City, Indiana, and are concentrating production in their New York factory. The Indiana factory, fully prepared to resume production this Fall, was never started.

Salvatore Ferrara dies

Salvatore Ferrara, 75, founder of the Ferrara Candy Company, died October 15th. He founded the firm in 1908 and was active in it until his retirement a few years ago. His son, Nello Ferrara, is presently one of the firm's partners.

NCA meeting well attended

More than 100 representatives from twenty one candy plants attended the NCA Sanitation dinner meeting for the Central West Trading area on October 15th. The program consisted of a film on plant sanitation and talks by Ralph Van Derwerker, Public Health Service U. S. Department of Health, Education and Welfare, and by John Guill, Chief, Chicago Office, Food and Drug Administration, on rodent control measures.

bars or bon bons

Burrell Belts are best!

Famous candies, like the one you see here, more often than not are conveyed on BURRELL Belts. And that's logical—because BURRELL Belts for candy manufacturers are designed and produced in the light of expert knowledge of candy plant conditions and problems, gained by working intimately with candy plants of all types and all sizes for almost half a century.

Take "Reflecto" Cooling Tunnel Belts, for example. Made by an exclusive BURRELL process, they give you:

- Better sanitary properties—100% oil and grease proof, will not absorb odors or flavors, clean easily.
- Longer life—tough, wear-resisting Belts which, many users report, give up to three times the length of service of ordinary Belts.

Features like these spell better production—greater operating economy. And you get similar advantages in all the other BURRELL products engineered to fit every phase of candy production. You'll profit, too, when you put BURRELL experience, quality and service on your production team—call us in on any Belting problem!

- ★ **FEED BELTS**
- ★ **BOTTOMER BELTS**
- ★ **BATCH ROLLER BELTS**
- ★ **WIRE BELTING**
- ★ **CARAMEL CUTTING BOARDS**
- ★ **"REFLECTO" COOLING TUNNEL BELTS—*Single & Double Texture***
- ★ **"REFLECTO" PLAQUES**

BURRELL BELTING COMPANY
7501 N. ST. LOUIS AVE., SKOKIE, ILLINOIS

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the Manufacturing Confectioner

with International Confectioner

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November 1959 Volume XXXIX—Number 11

Edited and Published in Chicago

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Weekend special; Sesame crunch

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The sweet and the sour

We are planning a tour to Europe for executives of candy and chocolate companies for the purpose of seeing new developments in machinery and processes.

We will spend six days at the tremendous Interpack Fair in Dusseldorf, Germany. It is by far the largest worldwide display of candy and chocolate machinery, plus the largest European show of packaging machinery and materials. Last year there were over 300,000 square feet of displays, and more is expected in 1960.

The tour will leave New York April 19th and return May 10th, 1960. Interpack Fair is held from April 20th to 27th. The visit will start with six days in Dusseldorf and be followed by two weeks of traveling to visit prominent and modern factories in several countries. Some factory visits have already been arranged, and others are being planned.

The cost of the trip will be under $1,100 per person. This price covers all transportation from and back to New York, all hotel accommodations, and almost all meals. All accommodations will be first class. Air transportation will be economy class, with the overseas portion by Jet. (First class air transportation is available at $350 additional to the above price).

This trip will give you an excellent opportunity to see the newest candy machinery on display, and then see many of these machines in operation in plants all over Europe.

We plan on a group of between fifteen and twenty for this trip. If you are interested, please advise us. A detailed itinerary will be prepared shortly

(*Continued on page 13*)

NOW IS THE TIME

TO FEATURE YOUR ALMOND CANDIES

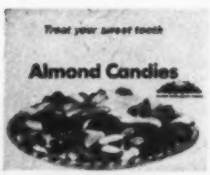
Almonds and almond candies are being featured this month in ...

leading women's magazines. But that's only 1 reason. A bigger reason $ is that California almond prices are the best in years which gives you the best way to add premium quality at low cost!

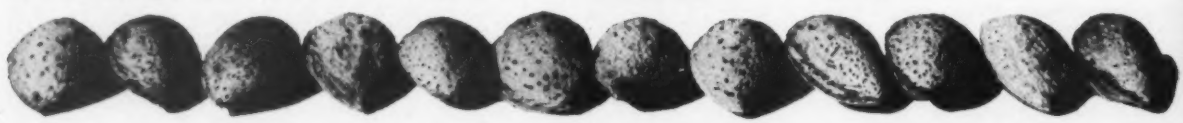
BLUE DIAMOND ALMONDS

CALIFORNIA ALMOND GROWERS EXCHANGE • P. O. BOX 1768 • SACRAMENTO 8, CALIFORNIA / SALES OFFICE: 100 HUDSON STREET, NEW YORK 13

P.S. GOOD IDEA TO GET & USE THIS FREE FULL COLOR 11" x 14" DISPLAY POSTER. *AVAILABLE IN LIMITED QUANTITIES*



Designed for use with counter and window displays, and as wall posters. Contact your Exchange representative or write, stating quantity needed, to California Almond Growers Exchange.



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Moment of Decision

will she choose your package?

This is the moment your product must face thousands of times a day . . . the moment that decides whether you make the sale or fail!

Helping Mrs. Consumer decide in your favor is the job Milprint packaging has handled with outstanding success for many of America's leading brands over the past half century. Put this unsurpassed know-how to work on your next package—call your Milprint man—*first!* Milprint Inc., General Offices, Milwaukee, Wisconsin, Sales Offices in Principal Cities.

Milprint* makes packaging that makes sales

*Reg. U. S. Pat. Off.

Printed Cellophane, Pliofilm, Polyethylene, Saran, Acetate, Glassine, Vitafilm, "Mylar"®, Foils, Laminations, Folding Cartons, Bags, Lithographed Displays

WE'LL LEND YOU THE KEY TO OUR TOP RESEARCH SECRETS!

Let Sunkist citrus research help enhance your products, or solve your processing problems.

"Know how" responsible for over 400 new citrus products—and 118 U.S. patents on processes—is at *your* service.

It may be our files can supply formulas or technical data by return mail. On any problem, simple or knotty, Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research laboratory. Write, and a Sunkist man will call.

Exchange

Sunkist Growers

PRODUCTS SALES DEPARTMENT

EXCHANGE LEMON OIL GIVES YOUR CANDIES MORE FLAVOR PER DROP!

One ounce of Exchange Brand Lemon Oil—made by the Sunkist Growers from their own juicy California lemons—will impart good, strong and lemony flavor to 20,000 lemon drops!

Whatever you're flavoring, a little lemon oil goes a long way...so it costs no more to use the best.

And which is the best? Exchange Brand Lemon Oil outsells any other lemon oil four to one.

As to specifications: "Exchange Brand Lemon Oil, U.S.P., California Cold-Pressed" means every drop is pure U.S.P. quality... unadulterated, unsophisticated.

Sunkist Growers pack and seal every container—from the 7-pound tin to the 385-pound drum—in their own plant. Always look for the word "Exchange" on the tamper-proof container seal. You can depend on it.

QUESTIONS, ANYONE?

For information on *any* Sunkist industrial product, write Sunkist Growers, Products Sales Dept., 720 East Sunkist Street, Ontario, California.

Exchange Brand Lemon and Orange Oils are distributed in the U.S. by Dodge & Olcott, Inc.; Fritzsche Bros., Inc.; Ungerer & Co.

The sweet and the sour

We don't normally take space in this column to plug any of our advertisers; however, I cannot help but re-inforce the sales pitch of an ad elsewhere in this issue for the sixth edition of a publication called "Conversion Factors and Technical Data for the Food Industry".

This is a truly monumental work of nearly 1500 pages covering such a wide variety of essential information that it would be quite impossible to even attempt to describe it.

The 24 pages devoted to basic conversion factors are so complete it seems incredible that anyone could fail to find a desired factor. Portions of its contents are slanted more heavily to the bakery field than to food in general; however, it does bring together such a wealth of general and specific information of both chemical and engineering nature that a person who once started using it would soon find it indispensible.

SEA

Almost interesting paper has been published dealing with analysis of chocolate flavor. The article is titled "The investigation of cocoa flavour by gas chromatography; with special reference to chocolate conching" by W. Mohr. It is in the September 1959 issue of *The International Chocolate Review*. This work was done at the Institute for Food Technology and Packaging at Munich, Germany under the direction of Professor Dr. R. Heiss.

This investigation indicated that very significant and reproducible analysis of chocolate flavor can be obtained by the use of gas chromatography and that flavor effects of conching are very clearly evident when investigated by this method. Of particular interest was the examination of low-boiling substances taken from samples of chocolate before and after conching. Here the effects of conching on these products is very clearly indicated in the pattern taken from a gas chromatography instrument. While apparently the same substances are there both before and after conching, their quantitative distribution has been changed markedly by that process.

We are waiting with a great deal of interest for reports on further work in this area which the article states is now underway.

SEA

We read in the *Science News Letter* that Russia is testing their new live polio virus by giving it orally in a candy base. Now this is a development that we view with satisfaction, and not only because we happen to be in the candy business.

Anyone who has witnessed a mass polio immunization certainly was aware of the pain, whether real or fanciful, that children exhibited during the "shot" method. Unfortunately, this is the only effective way of giving the dead virus which is the Salk type.

With a type of virus that can be taken by mouth, all sorts of interesting possibilities arise as to the type of candy in which it might be included. Regardless of the type, however, it is certain that there will not be any ducking out of line to avoid the dose. And further, since it will not have to be given professionally, as does a shot, it should cost considerably less.

In this area of research we have to wish the Russians well and hope they soon come up with the right answer.

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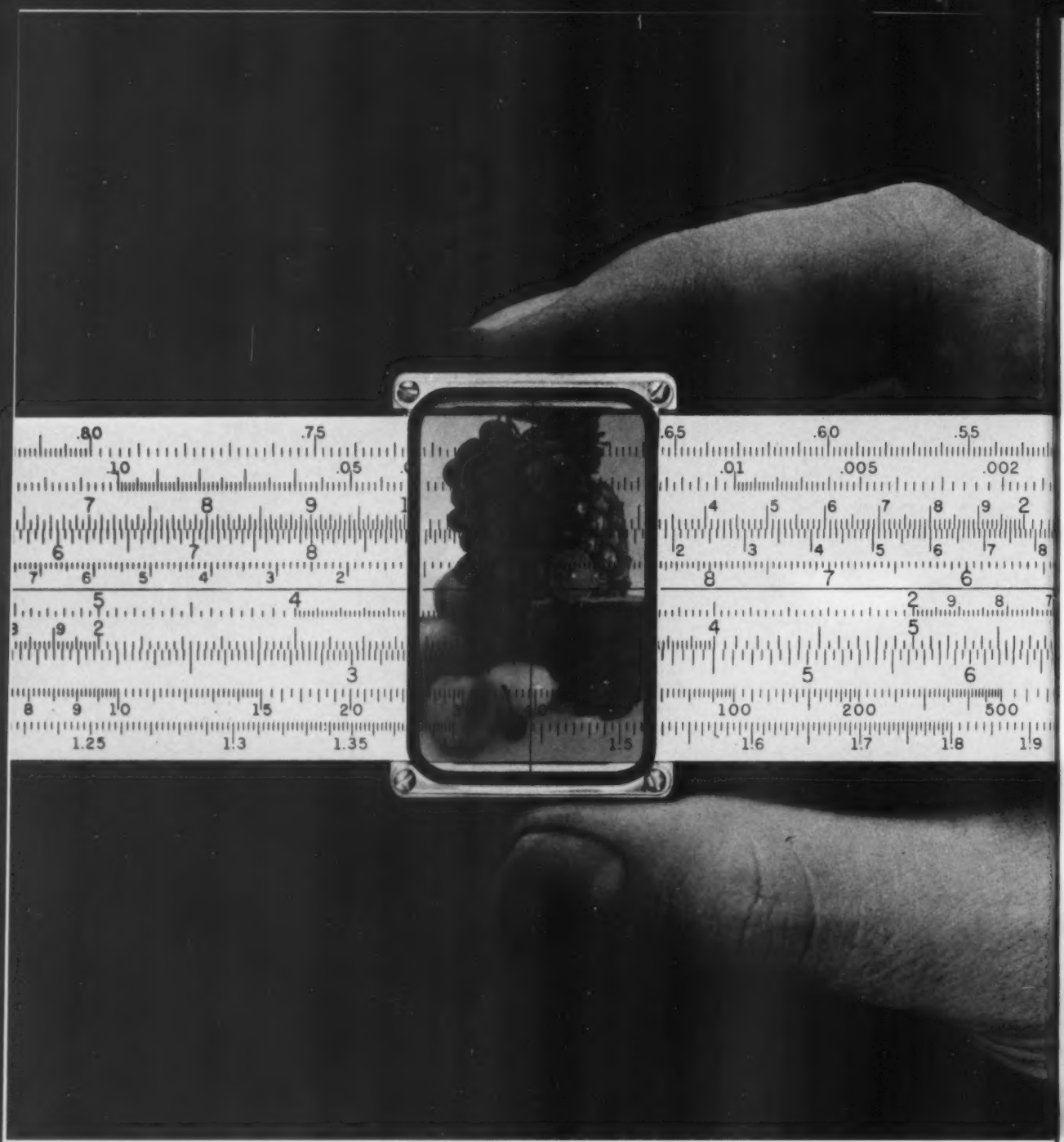

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Caramelization by steam injection

BY STANLEY E. ALLURED
Editor

Steam injection cooking was introduced into candymaking some years ago by the Farley Manufacturing Company with their starch gum cooker. With the advantages that many manufacturers seemed to find in this process for starch gums, it seemed probable to us that this type of processing might have application in other areas of candymaking.

When we heard of the development of a steam injection cooking apparatus by the Cherry-Burrell Corporation, we arranged to spend some time in their pilot plant to determine whether caramel might be made on, or with the aid of, this equipment.

The equipment line up in the pilot plant consisted of a steam heated slurry kettle, a variable speed slurry pump, a steam injection unit with variable steam pressure, a holding tube some five feet long and an adjustable back pressure valve. The cooked batch could be flashed to atmosphere or into a vacuum chamber at up to 29 inches of vacuum.

In previous conversations with knowledgable persons in the field of candymaking, the general feeling seemed to be that it was unlikely that enough time and temperature could be reached in such equipment to produce the amount of caramelization usually found in candy. Therefore, the operating conditions during the first test run were designed to get the greatest possible temperature, pressure and dwell time in the equipment, in an effort to produce maximum caramelization.

A batch was made up of 50 pounds of sugar, 50 pounds of regular corn syrup and 13 pounds of non-fat dry milk solids, plus water and heated to 120°F. It was put through the cooker at 300°F. four minutes holding time at a pressure of 60 pounds. The first material through was a nice light caramel color with good flavor, but as the equipment heated up the color got darker and darker. The end of the batch was nearly black from excessive caramelization, but with no scorched taste.

With the new-found knowledge that caramelization was very practical in this equipment, the next run was with the same formula, but at much milder processing conditions. The through-put was speeded to give only two minutes holding time, the temperature was held at 270°F. and the pressure at 40 pounds. Under these conditions, caramelization was entirely acceptable, and approximately equivalent to commercial practice.

After flashing this product to atmosphere a vacuum chamber was hooked to the delivery pipe and the candy was flashed to 27 inches vacuum.

When flashed to atmosphere, the candy had more moisture than was in the original batch. When flashed into vacuum and so cooled to the same temperature as the batch going into the cooker, the moisture removed was approximately equal to that added by the steam, and the moisture content the same as the original batch.

It is obvious that a commercial caramel product was not obtained, and this was not the purpose of the tests. The only purpose was to determine whether it was practical to continuously and automatically produce an acceptable caramel color and flavor and in this respect the tests seemed to give a great deal of promise.

It is obvious that no attempt was made to reduce the moisture level to that in the usual caramel. However, given a method of caramelization, moisture removal itself can be done continuously and automatically in a number of ways.

The cheapest method would undoubtedly be by some type of vacuum evaporator, either before or after the caramelization step. Several machines of this type are available.

Another method, given some ingenuity in formulation, would be to make moisture removal a by-product of caramelization. If the batch were heated on a swept-surface heat exchanger of the Vogt type to the range of 220° to 240° then into the steam injection cooker and immediately to vacuum, it is quite possible enough moisture could be removed to give the desired final level.

The high inherent efficiency of steam injection cooking has a great deal to recommend it to the candymaker. It is the most efficient use of steam, it is inherently continuous, and is subject to very close automatic control. For those candy cooking processes where a high heat is required for some chemical change, such as gelatization of starch in starch gums and the protein-reducing sugar reaction of caramelization, the steam injection method of heating is worth serious investigation.

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Uses and abuses of chocolate coating

BY TOM NEWTH
The Nestle Company

The subject of this paper is one of the most complex yet interesting subjects applied to chocolate coatings. Handlers of coatings (dippers, enrober operators, etc.) lack the education and training so essential to proper handling of coatings. It is because of this, that it is necessary for us to devise systems or techniques that are free of complexities and easily understood.

They should, however, be taught the fundamentals and have pointed out to them the reasons for adopting any technique. Where a change takes place from an old to a new method of handling coating, this change and the reasons for it should be explained in detail. This must be done in the simplest language and free of any scientific terminology. Too little time and attention is given to these operators, too little knowledge of the behavior of coatings is taught, and most of their knowledge comes from their own experience.

This is plainly the reason for the dearth of operators today, there being no school or center where this can be learned.

In order that we can readily identify abuses in handling of coatings we should fully understand what the manufacturer of chocolate coated goods requires for his product. These are: 1—appearance or gloss, 2—workability—the way a coating handles, 3—control of coverage, 4—a reasonable shelf life.

1—Appearance or gloss depends on proper tempering and it should be remembered that tempering starts with the liquid phase and does not end until goods are properly set. So much has been written on the subject of tempering that we need not repeat it here. However, it is well to consider the things that affect the temper of coatings which after all are abuses in themselves:

Too rapid cooling—Whether it be in the kettle, enrober or tunnel. At any of these points too rapid cooling will have its effect on the gloss.

Improper design of enrobers—where the reservoir for storage permits too much coating to be held too long.

Continuity of operation—Shutdowns when the enrober operates with no centers being covered thereby permitting the coating to advance in crystallization to a point where it loses both its gloss and workability. A coating after being tempered should be used up as quickly as possible.

2—Workability—This is a big factor in the successful operation of enrobing because it contributes to good gloss and continuity of operation as well as control of coverage. It can be defined as a properly tempered coating at its maximum fluidity being handled at the top temperature of the dipping range.

I know of several writers on tempering who do not agree that this is the better method, but who believe that coatings should be handled at the lowest possible temperatures when applied to centers. Most of these writers are thinking of fat bloom as their major consideration and are forced to admit workability is badly affected where this is practised.

We have found that where goods received proper care and storage, fat bloom is no problem when handled as we suggest.

3—Control of coverage—This, of course, depends greatly on the conditioning of the coating or its workability. It also is the point in operation where profits are most affected. If we can control the amount of coating put on each pound of centers, and not have it vary, we have made coating a far easier job than where this is not done. In the old method of operating this was impossible to maintain but with the drip feed—low level method—this can be done with great success.

4—Shelf life—This has been a bugaboo in the past because of fat bloom or gray work. We are certain that the old method of handling coatings was responsible for this. However, it should be remembered that the best tempered coatings will bloom unless properly stored and cared for. Recently so called bloom resistant coatings have appeared which do stand for more abuses than a regular coating, but these too can be made to

bloom under adverse storage conditions. We have experienced little trouble with fat bloom in recent years and have had goods hold up well for two years when properly stored.

From my experience, I think I am safe in making these claims:

1. That cocoa butter follows a natural law and handled the same way each time will react the same way each time.
2. That tempered coating should be used up as quickly as it is made.
3. That continuity of operation is essential to good work.
4. That too rapid cooling in tempering is the mistake that is made most often.

One of the writers of the past has stated that a tempered coating should be used but once and then detempered and retempered before being applied to centers again.

In line with this theory, enrobers are now being built with tempering units to do just that. This sounds good, but adds an intermediate step to what we now do. Each time we add more machinery it means more work and attention is needed to operate. We have tried to simplify operation by suggesting a method of tempering and feeding that requires a minimum of labor.

Another hazard we face in detempering and retempering is the seasonal changes in water used to cool the coating. A tempering unit to properly temper must be able to do it with water around 65°F. This calls for a large cooling surface when continually detempering or, otherwise, temper will be adversely affected. Cold water has been an abuse we have tried to eliminate. We hope that this has been considered in these new machines.

Constant tempering, or should we say, repeated tempering of coating offers too many chances for variation. It is for this reason we prefer the more simple technique of once tempering and using this for a seed bed, dripping an untempered coating into it. This has so many advantages, such as helping to maintain a uniform temperature—checking advancing crystallization—maintaining fluidity and lessening of labor, that we wonder why an intermediate step is considered.

Most of the difficulties and complaints about coatings can be traced back to improper tempering. Why then should we accept a technique that is founded on repeated need for tempering. This seems to me to just add more hazards to the work of enrobing and if it is difficult to teach proper tempering we are but adding to our difficulties.

Let us try to simplify our techniques rather than make them more complex. In a business where sales prices are held to a minimum, we must make our profits in production. Adding additional labor to a process certainly is not working to this end.

I am sorry to say that the major abuses to which coatings are subjected are due in most instances to either poor design or the attempt to make a small unit do too big a job.

Enrobers and particularly prebottomers could be designed to do a far better job than is being done today. Little change has been made in the functional design of these machines since they were first made. Certainly with the better knowledge and technique of handling coatings today more attention should be given to design.

Manufacturers have taken advantage of the drip feed system and have built special machines for drip feeding. I would rather have them work on making the coater more efficient. I can drip feed out of a clean tin can. As a matter of fact, many of these that I hung on an enrober years ago are still in use; the only change made is in the string and cardboard used for the valve.

Another sore point to me is the tempering units. Few of these have sufficient cooling surface to cool a coating say from 120°F. to tempering range without calling for ice water to do the job. It is abuses like these that are cause for concern and should be corrected.

It is claimed that ice water can be used for tempering in a certain type machine. We tried these at our plant and discarded them and were also convinced that the friction heat set up by the machine increased the water temperature materially. I personally had no experience with these machines but they were in the hands of experienced men.

This paper was presented at the October meeting of the New York Section, American Association of Candy Technologists.

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Moulding starch practice

By V. P. Victor, M. E., P. E.
Consulting Engineer, New York City

During the past decade, numerous excellent papers have been published on the isolated phases of starch composition, properties, behavior and handling. At least three codes for the prevention of dust explosions and for the relief of the pressure caused by the explosions have also been introduced. Unfortunately, certain conflicting data and at least one significant phase have been overlooked.

I. General

The primary aim of this "candy engineering" paper is to outline the major practical aspects of the starch presence (process, equipment and building) in the plant with all pertinent ramifications.

It is not within the scope of this article to supplement the wealth of the already published theoretical information on the explosibility of starch dust, molecular structure, hygroscopic properties, additives, etc.

Futile attempts have been made from time to time to eliminate the moulding starch in a confectionery factory. Below are the principal objections to the use of starch, some of which are difficult to overcome:

1. Explosion hazard.
2. Presence of bacteria in starch.
3. Large quantities of starch required even for a very modest production, i.e. from 25 to 90 tons for each moulding line.
4. Bulky and expensive equipment necessary to store, convey, clean, condition and to prepare the starch for casting.
5. Special building construction for all areas in which the starch is handled or stored.
6. Extensive sanitation maintenance caused primarily by the starch dust and spills.

The advantages are as follows:

1. Low cost and large volume production achieved with any modern starch moulding plant.
2. Offers an unlimited choice of shapes and sizes of cast products.
3. Impracticability, if not an impossibility, of manufacturing certain goods without casting them into starch.
4. Ability of starch to absorb and to desorp unbound moisture, i.e. above its equilibrium moisture content.
5. Ease of the starch materials handling, i.e. conveying, filling, dumping, etc.
6. Because the starch moulding and depositing machines have been in operation for a good

Editor's Note: V. P. Victor has an extensive background in process engineering, with particular emphasis on air conditioning, refrigeration and process heat exchange.

In his work with candy manufacturers, he has had considerable experience in candy machinery development, process engineering and factory layout.

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many years and the "bugs have been taken out", they are relatively dependable.

In short, the uses and advantages outweigh the limitations and the moulding starch is here to stay for another decade, or longer.

II. Process

The function of the starch is threefold, namely—(a) to receive the deposited material and to give it the desired shape, (b) to hold the deposited material during the subsequent drying, cooling, or solidification period and (c) to absorb moisture from the cast product to a greater or lesser extent.

Part (a) requires the greatest bulk of the equipment and, hence, investment.

A full fledged starch moulding plant with auxiliary equipment is expected to carry out the following operations:

1. Receive the stacks of boards containing the starch and the product and feed them into the moulding plant;
2. Turn the boards over and empty their content;
3. Separate starch from the product;
4. Remove the starch from the product and deliver the thoroughly clean product onto a conveyor;
5. Deliver the starch separated in (3) to the starch conditioning system for cleaning, drying and possibly cooling. Return the properly conditioned starch back to the moulding plant;
6. Fill the boards emptied in (2) with conditioned starch;
7. Level the starch flush with the top of the board and brush the starch off the board proper;
8. Print the starch with the male moulds to form receptacles for the product;
   Vibrate or tap the male moulds to remove any adhering starch;
9. Deposit or cast the product at a right temperature into the starch cavities prepared in (8). Successive multi-layer castings can be performed by the corresponding number of depositors arranged in series;
10. Remove the boards with starch and cast product, stack them and eject the completed stack;
11. Remove the starch dust from all sources without allowing its escape into the room air. Separate the starch from air in a dust collector and return the starch to the sifter and not back to the moulding machines. This is especially important where the final cleaning of the product is done by brushing and the broken bristles may be otherwise returned into the moulding machine;
12. Perform above operations at a sustained production rate, automatically and in a safe and sanitary manner.

The capacities, design features, construction details and the safety provisions will be described later.

Because of the rather prolonged part (b) of the process—holding, starch with cast goods is accommodated in separate boards which are stacked and stored in the properly ventilated or air conditioned rooms. Should the nature of the product allow rapid and sufficient setting or skinning of its surface, the product could then be deposited on a continuously moving belt without any moulding starch. In other words, the time element governs the choice of starch vs. belt.

The starch boards have been more or less standardized as far as the construction material (wood), the overall length (32 inches) and the depth (2½ inches) are concerned. However, up to 20 percent variations in width are encountered, but most of the boards are 14½ inches wide.

The objection to the wider board was its fully loaded weight, i.e. over 20 pounds. This was too strenuous for the manual handling. With the advent of the automatic board stacker and unloader, the use of the wider boards offers greater production rate and the lower initial cost of boards per pound of cast product. Incidentally, the average life of one board is approximately 1,000 passes through the moulding machine.

Boards are stacked one above the other to a height of from 30 to 34 boards. Greater height may impose excessive floor load, present difficulties on the automatic stacker and unloader, accentuate the possibility of the stack toppling over and impair the air circulation between the ceiling and the top of the stacks in the boards storage rooms.

The stacks are moved into the storage room and back to the moulding machines manually. The stacks are either placed on dollies or picked up by special trucks. The latter have the advantages of lower initial cost, lateral support of the stack during transportation, one man operation and lower headroom. Besides, the empty dollies do not have to be moved from the inlet to the discharge end of the moulding machine.

In a fully automated future factory, the stacks or the individual boards will be conveyed into the storage room, kept there for the required period of time and then returned back to the moulding machine. Tentative design of such an installation has been worked out. However, from the financial viewpoint the investment was not warranted.

Goods, as cast, are in a liquid or a highly fluid state and hot. Their prolonged storage in the starch is intended to accomplish one or more of the following functions—setting or solidification, cooling, drying and curing. Drying takes the longest time, i.e. from 16 to 40 hours. With modern dry rooms there is no known confectionery product that cannot be satisfactorily dried in this time.

Moisture migration to the starch either from the cast product or from the surrounding air always takes place.

For best end results, certain products require different starch temperatures at casting. Besides the starch must be continuously cleaned and any lumps, tailings and other foreign material removed. Hence, the starch coming in direct contact with the cast product must be clean and properly conditioned.

While no products pass through the starch conditioning system, nevertheless it comprises an indis-

pensable part of the starch circuit or process. It will be described in detail separately.

III. Product

Upon having ascertained the necessity of casting the product into starch, in lieu of other manufacturing methods, the following specific product and starch data have to be established or evaluated.

1. Casting temperature of product.
2. Moisture content of product at casting.
3. Starch conditions at casting, namely the initial temperature and moisture content.
4. Holding time in the storage room, be that a dry room, air conditioned or just a ventilated room.
5. Optimum conditions of air maintained in (4), if any.
6. Final product temperature and moisture content.
7. Final starch temperature and moisture content.

From the viewpoint of starch, only the items (3) and (7) are significant. They are, however, governed entirely by the product and by the changes the product underwent during (4). As the sole criteria of the latter, the holding period is usually terminated when the product is sufficiently firm for the subsequent rather rough treatment, namely dumping and cleaning.

Preliminary cleaning is performed by brushing off the starch in the machine proper. Secondary cleaning is done outside the machine in a separate attachment either utilizing revolving brushes or using air to blow off the starch still remaining on the surface of the product. In either case, the created starch dust must be removed immediately by an exhaust air fan and delivered to a dust collector.

No matter how thoroughly the product was cleaned, its surface still remains dull and gray. The finishing operation is intended to impart an attractive appearance to the cleaned product. Three methods—(a) wet, (b) dry or (c) their combination are employed as outlined below.

a) The surface of the product is wetted by quickly passing it through a chamber containing humid air. Because the moisture is introduced by a steam jet, this operation is called "steaming". Slight condensation of the moisture on the surface of the product causes its melting, thus making it smooth and clear.

   Subsequent drying, and sometimes cooling, is carried out on a long wire mesh belt conveyor with proper air circulation in order to remove surplus moisture as well as to dry the wet surface of the product.

   The above steaming is similar to one used prior to sugar sanding.

b The surface of the product is covered by a thin film of oil, which results in the restoration of true color and imparting a gloss. The operation has been nicknamed "vaselining".

c) First, the product is steamed and dried and second-oiled.

The professed value of the oil, in addition to its clearing effect, is questionable. Claims have been made that it prevents sticking and offers protection against humidity. The selection of proper oil has always presented numerous difficulties. On the other hand, the long drying (after steaming) conveyor belt is usually made of stainless steel and is, therefore, expensive.

Both wet and dry methods are continuous and do not require an attendant.

IV. Starch Moulding Machine

There are several machine types and makes on the market.

The principal differences and deficiences are:

1. *Continuity of motion* or how many intermittent stops and starts one board has to make from the inlet to the outlet of the machine.

   Obviously, the less stops the board will make the less will be the wear and tear on the machine and the board. Furthermore, abrupt stops may disturb the printed starch and cause scrap. With ever increasing speed (over 20 boards per minute is common practice), the jerks and the machine vibrations must be prevented.

   Numerous devices and features have been introduced during the past decade. Among them could be listed: the uniformly accelerated motion to stop and start the boards, casting several staggered rows at a time, using several depositors in series to cast alternate banks of rows, swinging or pendulum type depositors, etc.

2. *Design features* and the construction details are appreciated and become prominent only in operation.

   Very often the compactness of the machine is stressed and used as a sales appeal. Saving the floor area is desirable but not at a sacrifice in accessibility, which is paramount for proer maintenance or sanitation.

   It is advantageous to keep the quantity of starch in the machine at a minimum and this is where the bulk of the machine could be and has been effectively reduced.

   Synchronization of all component mechanisms of the machine as well as the ease of compensation for wear deserves utmost attention. This is especially pronounced where the depositor is not an integral part of the machine.

   It has been habitually said that to break one starch board is a lot cheaper than to damage any machine part. This fallacious concept has also been used as an argument against the use of stronger, light metal or plastic boards.

   However, the tacit acceptance of the inevitability of broken boards costs money and may cause a lot of trouble by contaminating the starch with splinters.

   Overload release devices, either mechanically

Continued on page 26

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or electrically operated and not the shear pins, should be installed in places where jamming is apt to occur. Their prompt action is more dependable and safer than the broken board. Few, if any, starch moulding machines have these overload devices.

The sections of the starch machines, with the exception of one make, containing starch rest directly on the floor throughout their length and breadth which represents an appreciable area.

It is physically impossible to clean the floor underneath. Raising the floor, i.e. putting the machine on a concrete pad, prevents the water used for the floor washing from entering and remaining under the machine, but this is not the answer.

Attempts to overcome this situation embodied the placement of the machine on studs. The machine frame between these supports had to act as a beam. Not having been designed for such a mounting, excessive vibrations developed even at a moderate speed.

3. *Mechanical details* of construction vary drastically. It may be quite a shock to a prospective buyer to discover that some machines are still being hand-fitted during assembly. In other words, many replacement machine parts are not interchangeable and require work of one sort or another prior to their installation.

Among other mechanical features one must mention the use of ball bearings, better balancing of all moving (rotating and reciprocating) machine parts, central lubrication system and the accent on the elimination of the most remote possibility of forming a spark.

Besides the explosion proof construction of the electrical equipment, the possibility of two moving metal machine parts accidentally striking each other must be anticipated. This specifically applies to the fan wheels or impellers, guards, starch buketed type elevators and to the certain parts of the starch driers and coolers. The use of brass, aluminum and or other similar metals for the housing and of steel for the moving parts will result in a non-sparking construction.

Many a machine has been justly or unjustly blamed for poor performance resulting from vibrations. The latter, of course, were attributed to the operation of the machine proper.

Any high speed or heavy duty equipment will break down or be thrown out of alignment by vibrations. The latter sometimes, could be easily traced to poor supports or weak foundation.

Many a machine has been placed on a wooden floor of adequate strength to carry the weight but not to counteract the vibrations.

The practical methods of providing for or damping the vibrations are applicable to spe-

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cific sets of conditions and, hence, would be too voluminous for this paper.

V. Starch Conditioning

From 4 to 6 tons of starch per hour flows through a moulding starch plant. In very few cases does 100 percent of the starch pass through the starch conditioning system.

The latter, as previously stated, comprises magnetic traps, sifter, drier and possibly a cooler with necessary interconnecting conveyors. In the majority of installations, from 25 to 75 percent of the starch flow is diverted for conditioning and the balance goes through untreated. This subdivision of flow has always been a controversial subject. In practice, the limitations have been imposed by the equipment capacities, regardless of intentions.

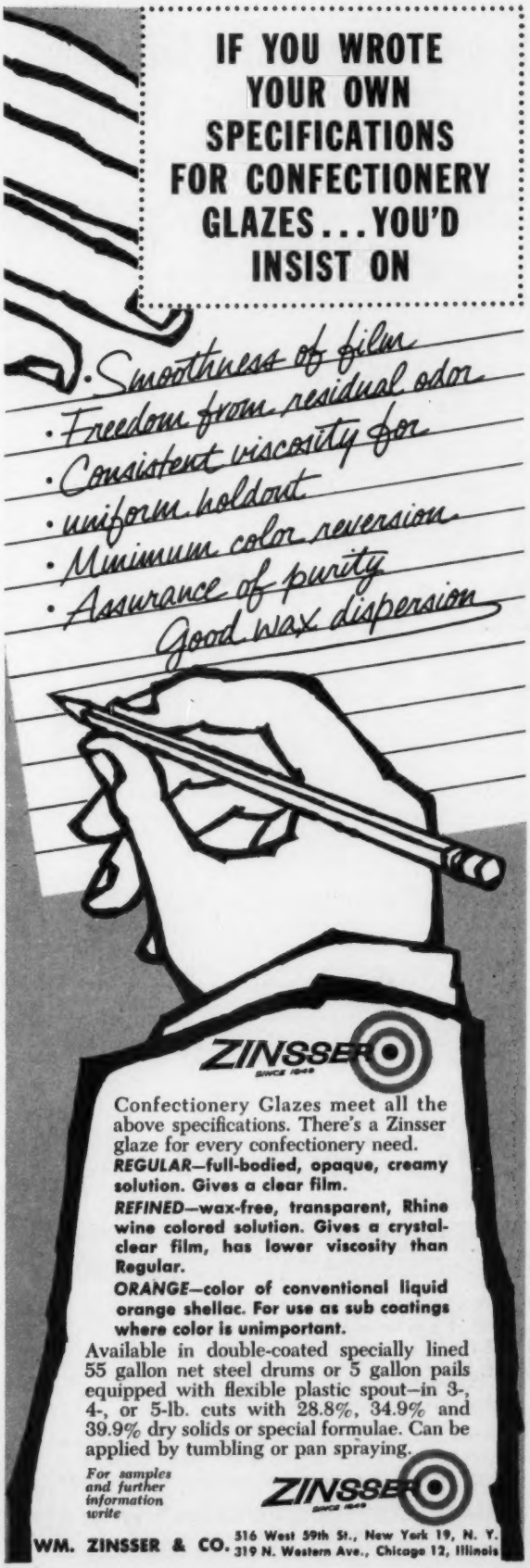
For example, today there is not a single commercially available sifter on the market that could satisfactorily clean starch at a rate even approximating 200 pounds per minute. This statement applies to starch of about 7 percent moisture content and a wire screen opening not exceeding #40 mesh Durloy (.0163 inch opening, 61.5 percent open area). For best results, 100 percent of the starch flow should be cleaned by two sifters working in parallel.

The purpose of the drier is twofold—to remove moisture and to heat up the starch. The moisture picked up by starch from the cast product and from the air must be removed in the dry room and in the drier, provided both are available and used as a part of the process. In the absence or the inadequacy of one, the other intentionally or haply carries the proportionately increased drying load.

Probably, the majority of the dry rooms have been used in the past for the gum work. With the introduction of pressure cooking the need for the heavy duty dry room diminished. However, as will be outlined under "Safety Provisions", the rate of air circulation in the dry rooms, as well as in any other boards storage rooms, should be kept high. High pressure air nozzles at the ceiling for the supply air and the low velocity air return openings at the floor, both installed the full length of the room have universally produced excellent results.

If possible, the conditions (temperature and humidity) of air should be such as to cause a slight drying effect or at least to prevent the pick-up of moisture by starch. Air distribution must be uniform throughout the full height, width and depth of all stacks of boards. Usually one room holds the output of one shift, which means from 6,000 to 8,000 boards. To provide for an even air flow across all boards requires properly designed and installed air system.

There are plants in which the dry rooms have a nominal air circulation and, in reality, are heated rooms for storage of boards. Practically all moisture from the cast goods is absorbed by the starch and is subsequently removed in the starch driers. Because of the heavy load, two driers in series are used. In other words, the starch passes from one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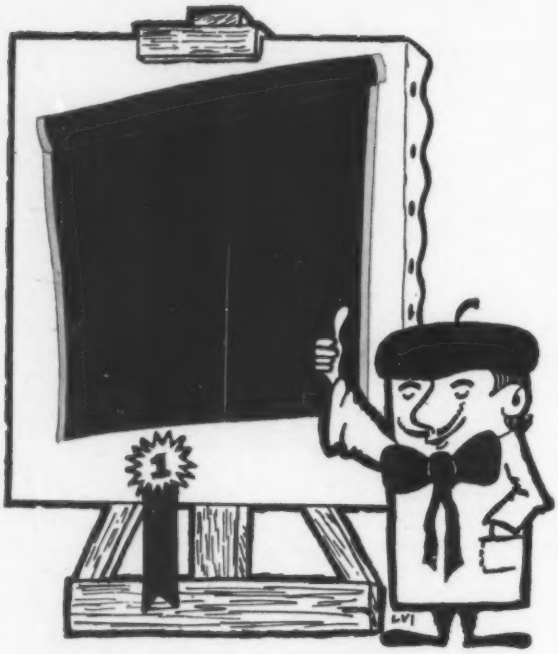

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drier into another. The disadvantage of the resulting high starch temperature is offset by the greater sterilization effect and lower steam consumption. Dry rooms are less efficient than the starch driers.

The total moisture removal from one board varies from one tenth to two thirds of a pound. The initial, i.e. at casting and the final, i.e. entering the moulding machine, conditions of starch must be kept within practical limits to suit the product and to facilitate the starch removal from the product.

The effects of the moisture loss and gain on the respective initial and final moisture contents have to be carefully established and controlled. Sustained maintenance of the predetermined optimum moisture contents calls for the adequate capacities of pertinent machinery.

The starch temperature is elevated in the drier. Lowering of the temperature is accomplished in a starch cooler. There are two basic principles underlying the heating and cooling processes.

One is by means of direct contact with a hot or cold surface, which is called conduction. The other is to bring the starch into an intimate contact with heated or cooled air, which could be called aeration or convection. In practice there are machines which utilize either the conduction principle alone, i.e. a series of jacked troughs with worm (screw) conveyors, or the combination of both, i.e. a rotary drum with a stationary nest of pipes. In the latter type, air also is passed through the stream of falling starch to supplement either the heating or cooling effect of the pipes. Good heat transfer is achieved and is due to the large exposed area of the starch in a dust cloud.

In a conduction type, only a sliding contact and a moderate tumbling action are caused by a relatively slow moving conveyor. In this manner, the dust is kept at a minimum and is purely incidental to operation instead of being its pre-requisite.

In the conduction type drier, the liberated moisture is carried away by a low velocity air passing above the top of the troughs. The conduction type cooler could be made of tôtally enclosed jacketed tubes without requiring any air at all.

Heating of the starch is rather easy because of an appreciable temperature difference between the starch, steam or air. Cooling of the starch is more difficult. Whenever the temperature of a surface is equal or below the dew point temperature of air in contact with it—"sweating" or condensation of moisture from the air will take place. In an extreme case, cold surface will be covered with ice.

Therefore, there are practical limits of surface temperature below which troubles are apt to occur. Because of the resulting small temperature difference, greater heat exchange areas have to be provided.

The rotary drum is much more efficient cooler than the conduction type, provided the maximum permissible quantity of precooled air is passed through the drum.

Besides continuous conditioning of starch, its physical properties must be periodically analyzed. Aging, oil content, amount of additives, if any,

and the constant, unavoidable make-up of losses by additions of new starch may cause adverse variations in its moulding and hygroscopic characteristics.

The practice of adjusting the product to fit the starch for any reason whatever should be discouraged.

The moulding machine and the above equipment, namely the sifter, drier, cooler and dust collector, are interconnected by conveyors. The type and the arrangement of the conveyors deserve utmost attention.

On the older jobs, bucket type conveyors have been used. About twelve years ago a machine worm type conveyor was first used to remove starch from the machine and lift it into an overhead sifter. Because of the success of this installation, the bucket conveyor became obsolete and was replaced by the worm type. Both of them originated in and were adapted from the flour mills and bakeries.

During the past few years, a pneumatic conveyor was introduced into the baking industry. There is nothing new about pneumatic conveying, except certain very significant new features were developed. A brief description of pneumatic conveying follows. There are two types—positive (pressure) and negative (vacuum).

In either case, the material is air-borne and moved any horizontal or vertical distance through a pipe. Cotton, metal turnings, gum drops, any fibrous and bulk materials such as—wool, licorice root, sugar, beans, oats, etc. have been conveyed at velocities ranging from 2,500 to 9,000 feet per minute. The ratio of the weight of conveyed materials to the weight of air moving it is one of the most important factors.

The separation of the material from the air at the point of delivery does not present any difficulties. However, adequate means have to be also provided for disposal of air. Large dust collectors or separators are used. Space does not allow the presentation of further data on this topic only related to the subject matter of this article.

The recent developments in the flour conveying consisted of using higher air pressure (up to 15 pounds per square inch) and drastic increase in the aforementioned material to air ratio. In practical terms this means smaller conduits, ease of air disposal and, in general, smaller equipment.

The principal advantages of pneumatic conveying are:

1. Low initial cost;
2. Low maintenance cost, as there are practically no moving parts;
3. Flexibility and ease of making changes, additions, moving, etc.;
4. Dust free operation;
5. Sanitary;
6. Exhaust or withdrawal of air from the room is the by-product of the pneumatic conveyor;
7. The conveyor system holds a minimum quantity of starch.

The disadvantages are:

1. Higher power consumption;

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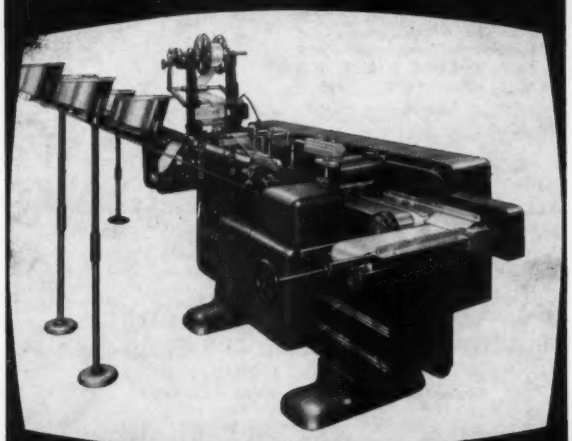

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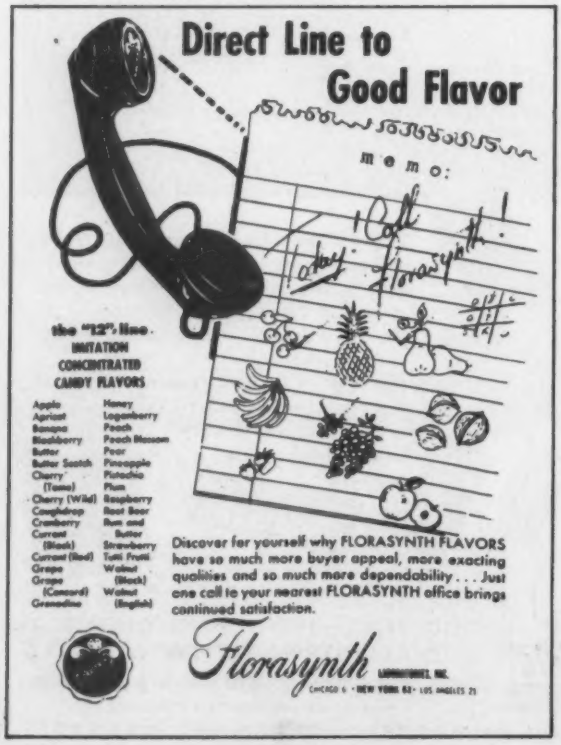

2. Dehumidified air is required for conveying of hygroscopic materials;
3. Not suitable for fragile or delicate materials;
4. The suction (negative pressure) systems could be noisy;
5. Because of the impact of material at the turns, the short radius elbows of conduits (pipes) may require frequent replacements. Long sweep elbows will last much longer. To counteract the abrasion, there are today on the market special long wearing fittings made of hard alloy steel. The critical sections are made thicker and are bolted on to facilitate their inspection or replacement.

Regardless of the selection of the conveyor type, i.e. screw or pneumatic, certain provisions should be incorporated into their layout. These precautions will lead to greater operating reliability and safety as well as protect the equipment from damage.

1. Magnetic traps should be installed at both ends of the moulding machine, i.e. for outgoing and returning starch.
2. By-passes with gates should be erected to allow the proportioning of starch flow or for complete isolation of the sifter, drier and cooler. In other words, all or either of these operations could be by-passed at will without affecting the others.
3. Provide rotary type air lock valves to prevent undesired air entrance into the starch circuit.
4. In the case of plurality of moulding machines and of the starch conditioning systems, the latter should be equipped with interconnecting conveyors.

VI. Safety Provisions

Emphasis has been repeatedly placed by different authorities on the allocation of preferred space in the plant for all starch operations and storages. The designated locations are along the outside walls and, in the case of a multi-story building, on the top floor.

No reference whatever is made to the efficiency of the plant operations, materials handling, etc. The ease of relieving the explosion pressure was the commendable and apparently, the dominating, if not exclusive, motive.

If all available safety gadgets were put on a plane, it would become the safest plane in the world as it could not fly on account of its weight. The reason for the existence of a factory is production at a profit. Hazards which endanger people and the equipment must also be recognized.

Hence, one cannot sacrifice safety to profits, or vice versa. The solution lies in sufficient safety consistent with efficient production layout and feasible building construction or alterations.

One shift operation of one moulding plant calls for manual (at the present time) materials handling in excess of 100 tons. This weight consists of starch, boards proper and cast product. Obviously, any reduction in the travel distance is highly desirable.

In terms of the plant layout, the above requires

Continued on page 35

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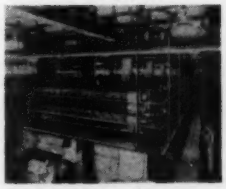

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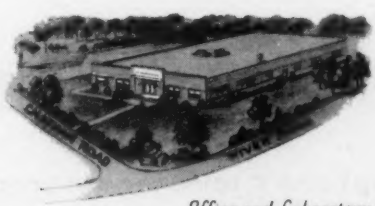

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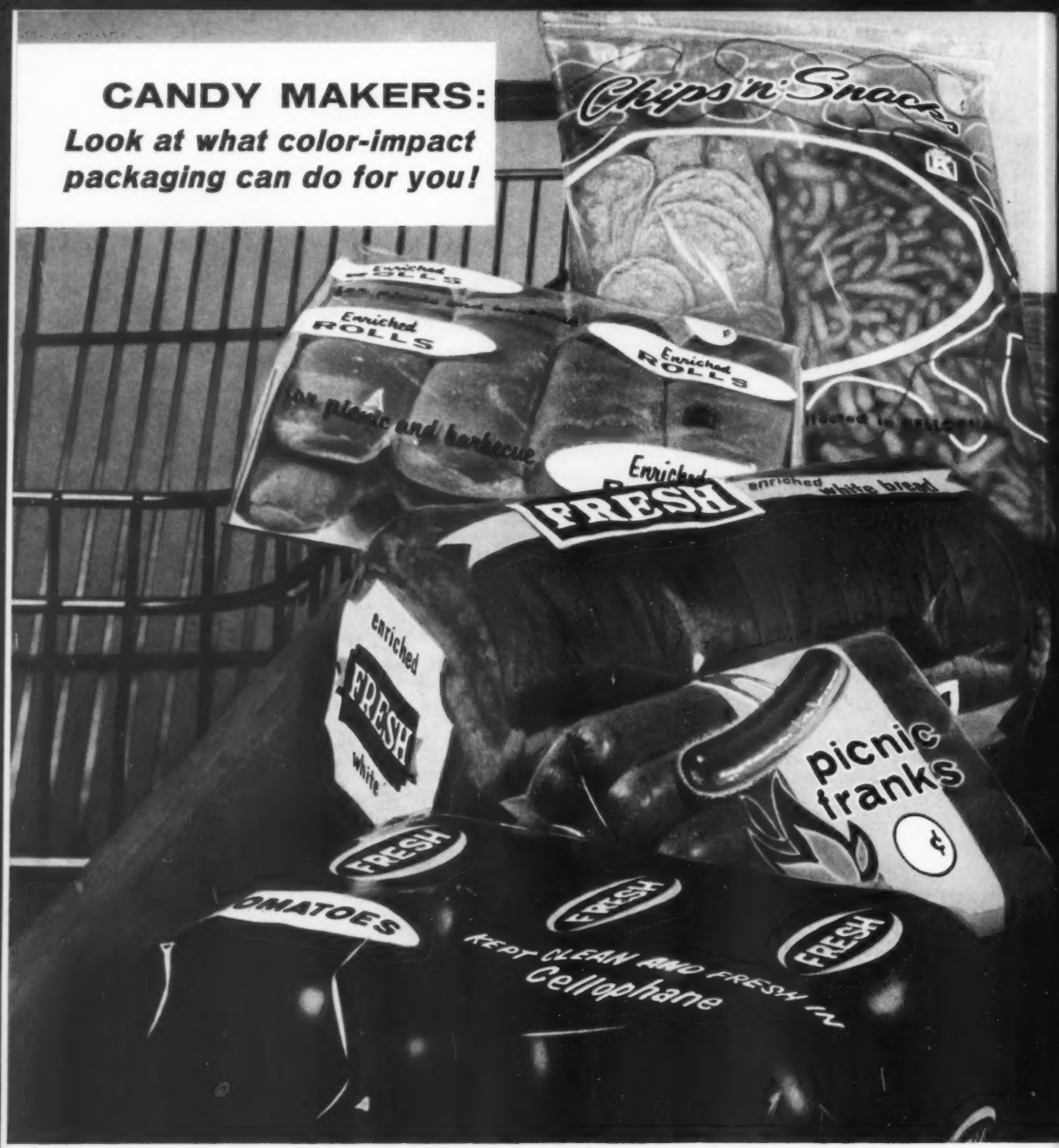

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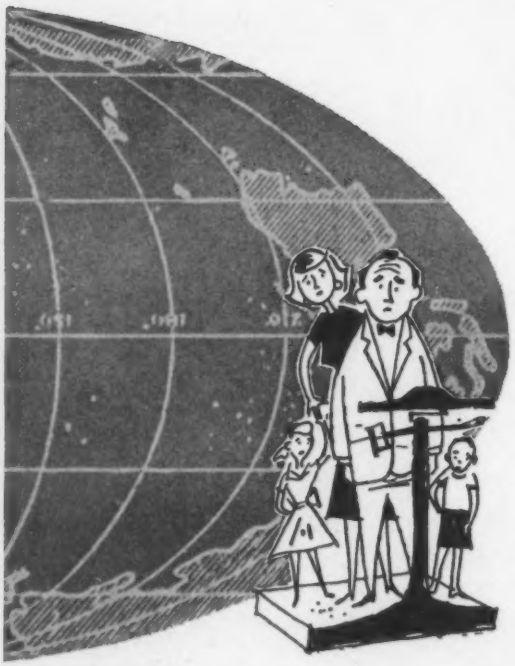

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the placement of the starch rooms in the immediate vicinity of the moulding operation. At the same time, it would be impracticable to locate the cooking or preparation department away from the depositor. However, the goods from the moulding machine could be conveyed anywhere.

In an existing building, the shape and the size of the available floor area impose handicaps on an efficient layout. In a new building, the outside walls are usually expandable, i.e. provide for the future plant expansion. Furthermore, the perimeter of the building represents the longest available straight distances and, hence, should be assigned to long and uninterrupted production lines.

New buildings, most likely, will be of a single floor type. Hence, the venting of explosion pressures could be done vertically through the roof instead of horizontally through the walls and windows.

The starch conditioning equipment, as recommended, should be located on top of the building in a penthouse for maximum venting. Usually this equipment is placed directly above the moulding machine on account of the shortened conveyors and direct gravity chutes for starch return. Such an arrangement is all right provided the required venting area is maintained. Improved practice would be to place the starch conditioning equipment above other than any starch containing or handling area. Thus ample unobstructed venting area can be made available above all starch handling areas at the expense of only slight additional complication in the conveyors.

Incidentally, there is quite a substantial discrepancy in the requirements of the explosion venting (pressure relief) areas. Three codes or publications specify respectively, one square foot of explosion venting area for each thirty, fifty and eighty cubic feet of room volume.

Ample data have been published on the building construction details and, therefore, need not be repeated herein. The published material seems to stress the "cure" instead of prevention of explosions.

Spark or open flame and a cloud of starch dust of rather heavy concentration are the pre-requisites of an explosion. There are other theories on the cause of the explosions, but their probabilities are insignificant when compared with the foregoing.

The subject of the air borne starch will be discussed first.

As a matter of fact, the starch-air mixtures exist all the time in the moulding machine, sifter, rotary drum drier, rotary drum cooler and at the starch transfer points. This is due to the starch being unceremoniously dumped everywhere. Sliding transfers, assisted by vibrations, would drastically reduce, if not eliminate altogether, the dust formation, except in the rotary drums and sifter.

Again, the use of the sliding, conduction type driers and coolers would seem to be the step in the right direction. Pneumatic conveyors, because of the absence of any moving metal parts, may not prove objectionable.

As far as the sifter is concerned, at the present time there does not seem to be a solution. Starch

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becomes air borne after having passed through a screen.

Dust clouds could also be made accidentally, for example by upsetting a stack of boards, failure of the dust collector, break in a canvas connection on the sifter, etc. Of course, stacks could be upset anywhere on the floor and at any time.

Consequently, the antidote consisting of immediate dilution and removal of dust must be constantly available over the entire starch area. Such an omnipresent and instantaneous service could be, and already has been, rendered only by strong and constant circulation of air throughout all starch containing spaces.

The rate of air circulation should be greater in the areas containing larger quantities of starch, which are the boards storage rooms.

Air flow through the moulding room should be at a rate from fifteen to twenty complete changes of room volume every hour. For example, a room occupying a volume of 36,000 cubic feet should have air circulation from 9,000 to 12,000 cubic feet per minute. Air circulation in the dry room may vary from 30 to 120 changes per hour, depending upon the desired drying effect.

No air at all should be recirculated through the moulding room, i.e. all fresh outside air should be supplied to the room and the equal or slightly greater volume exhausted from the room back to the outdoors. Air recirculation through the dry room may vary from 50 to 90 percent of the total circulation.

Unfortunately, the foregoing ventilation phase has been completely ignored in all published papers, pamphlets and regulations.

As far as the prevention of a spark formation is concerned, one should follow the time tested practice in the solvents or explosives manufacturing buildings. There are three ways in which a spark could be produced, namely—(a) static electricity, defective or improper electrical equipment or wiring, (b) by a mechanical impact or strike of two metal parts and (c) by excessive friction.

As previously stated, starch should not be overheated. However, high pressure steam (say 125 pounds per square inch) no where near approaches the ignition temperature of starch. Hence, this potential source of trouble should be considered, but not from the viewpoint of the explosion danger.

Emphasis must be placed on the control and elimination of static electricity. This applies specifically to any moving machine parts, brushes, belts and footwear. Electrical wiring and lighting have to be not only of the required type but protected against damage as well. Grounding of all electrical machinery and of the building as a whole must be well done and periodically checked.

Various metallic objects in a factory will always strike each other. In other words, it is impossible to avoid an impact. To prevent striking a spark, non-sparking materials and construction details have to be used.

Excessive friction is caused by a break-down or lack of lubrication. Overload warning or cut-out devices should be installed on all large motors.

For the sake of clarity and definiteness, all safeguards for the prevention of explosions are recapitulated below. These comprise the requirements and recommendations outlined in various codes, former publications by different authors or organizations, as well as the suggestions described in this presentation.

The operational and built-in safeguards to prevent explosion are:

1. Utilize non-sparking construction for moving machine parts, fan wheels, conveyors, truck wheels, guards, etc.
2. Provide adequate air circulation in all areas containing starch.
3. Install a dust collecting system to service all dust producing devices.
4. Replace the dumping of starch by the sliding type of transfer. This applies to the moulding machine, conveyors, starch drier and starch cooler.
5. Incorporate the overload release and warning devices on all mechanisms and motors.
6. Electrical wiring, motors and lighting to be of the required type, to be properly grounded and to be adequately protected from accidental damage.
7. One master switch to be provided which will enable the operator to simultaneously stop all motors. Starting of the motors to be done in-

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dividually. Each starter to be equipped with a signal light.

8. Install magnetic traps to remove tramp metal from starch.
9. Each room for boards storage, the moulding room and the room for the starch conditioning system to have individually valved sprinkler branches supplied from a main located outside the starch area.
10. All steam valves to be automatically shut-off simultaneously with the motors operating the respective equipment. This applies especially to starch driers.
11. Counteract static electricity and enforce proper footwear for the personnel.
12. Average operating moisture content of starch to be about six percent. This will decrease its dispersability, which is susceptability to the dust formation.
13. Carrying out any repairs in the starch containing area to be placed under supervision of a responsible person. Welding, acetylene flame, grinding and cutting to require special authorization before starting. Dropping of tools or metal parts to be warned against.
14. No matches or lighters to be carried by the personnel.

The "cure" of the reduction of damage caused by the explosion and of its propagation comprise the pressure venting provisions and special building construction.

This phase has been adequately covered in various publications. However, one must take exception to limiting the floor area of one dry room to one thousand square feet. Nowadays such a small room cannot hold the output of one shift and, hence, is impractical.

VII. **Summary**

High and, very often, tragic price has always been paid for progress based on experience alone. The magnitude of the event or accident is fully appreciated only after its occurrence.

Fruitful hypothesis is the alternate route to progress. Factual data are compiled from all sources and then translated into tangible form or practice. This is one of the main purpose of engineering activity.

As previously stated, this paper supplements the already published works and codes. Improvements, suggested herein, will increase the initial and, to a lesser extent, the operatinge costs.

The existing installations are not subject to any new rules because of the real handicaps or the pretext of the "prior art and practice".

New installations in the existing buildings must consider all three: the feasibility, safety and efficient operation. Only completely new jobs, i.e. building and machinery, could carry out in full the new recommendations.

Notwithstanding, one should face the realities, recognize the prevailing deficiencies and sooner or later take corrective action.

In conclusion, this is a small article on a big and controversial subject.

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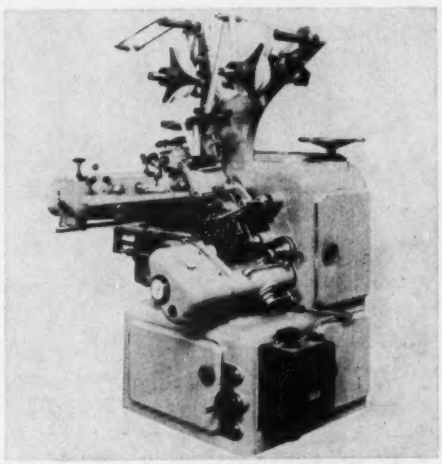

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November 16; Confectionery Salesmens' Club of Philadelphia, 1:30 P.M. meeting, 2601 Parkway, Philadelphia, Pa.

November 17-20; Packaging Machinery Manufacturers Institute Show of 1959, New York Coliseum.

November 20; St. Louis Candy Sales Association, Thanksgiving party, 7:30 P.M., Congress Hotel, St. Louis, Mo.

November 28; Southwestern Candy Salesmens' Club, luncheon meeting, Sammy's Oak Lawn Restaurant, Dallas, Texas.

November 28; Gopher Candy Club, luncheon meeting 12:30 P.M., Normandy Hotel, Minneapolis, Minn.

December 4; St. Louis Candy Sales Association, 7:30 P.M. meeting, Congress Hotel, St. Louis, Mo.

December 7; Denver Mile Hi Candy Club, breakfast meeting, 7:30 A.M., Denver Athletic Club, Denver, Colo.

December 10 & 11; WCSA, convention and annual meeting, LaSalle Hotel, Chicago.

December 19; Los Angeles Confectionery Sales Club, special meeting, Statler Hotel, Los Angeles, California.

1960

January 10-14; Boston Candy Show, Statler Hotel, Boston, Mass.

January 17-21; Philadelphia National Candy Show, Benjamin Franklin Hotel, Philadelphia, Pa.

January 24-26; NCWA, Western candy show and convention, Mark Hopkins Hotel, San Francisco, Calif.

March 9-11; Western Candy Conference, Claremont Hotel, Berkeley, Calif.

April 27-29; PMCA, 14th annual production conference, Franklin & Marshall College, Lancaster, Pa.

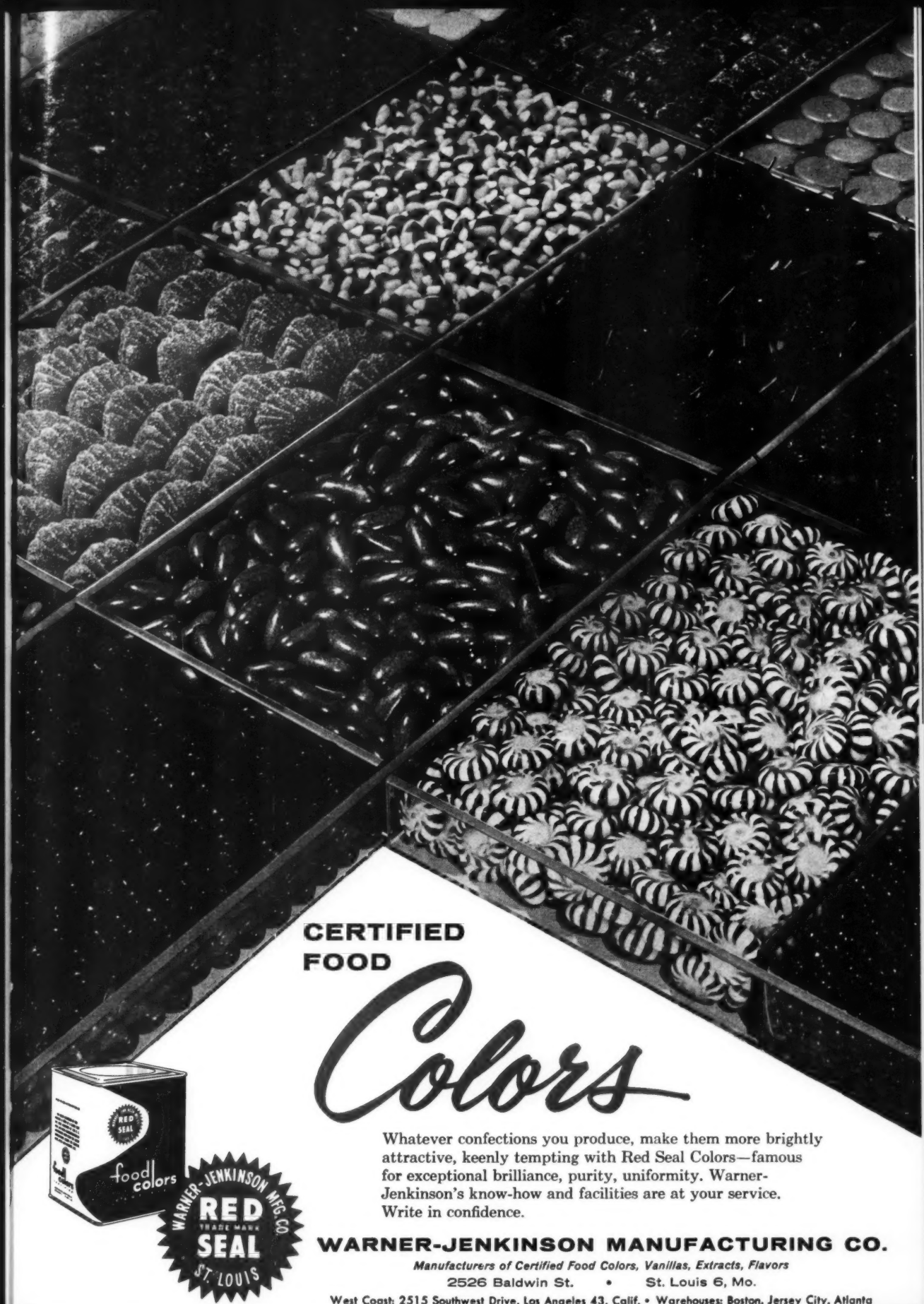
April 20-27; Interpack, 2nd international packaging exhibition, Dusseldorf, Germany.

June 5-9; National Confectioners Association, 77th annual convention, Philadelphia, Pennsylvania.

June 9-12; New York Candy Club & Metropolitan Candy Brokers Assn., 5th annual candy show, Trade Show Building, New York City.

July 10-13; SWTCA, convention, Hotel Roanoke, Roanoke, Virginia.

July 30-August 4; NCWA, 1960 convention, Sheraton-Park Hotel, Washington, D. C.



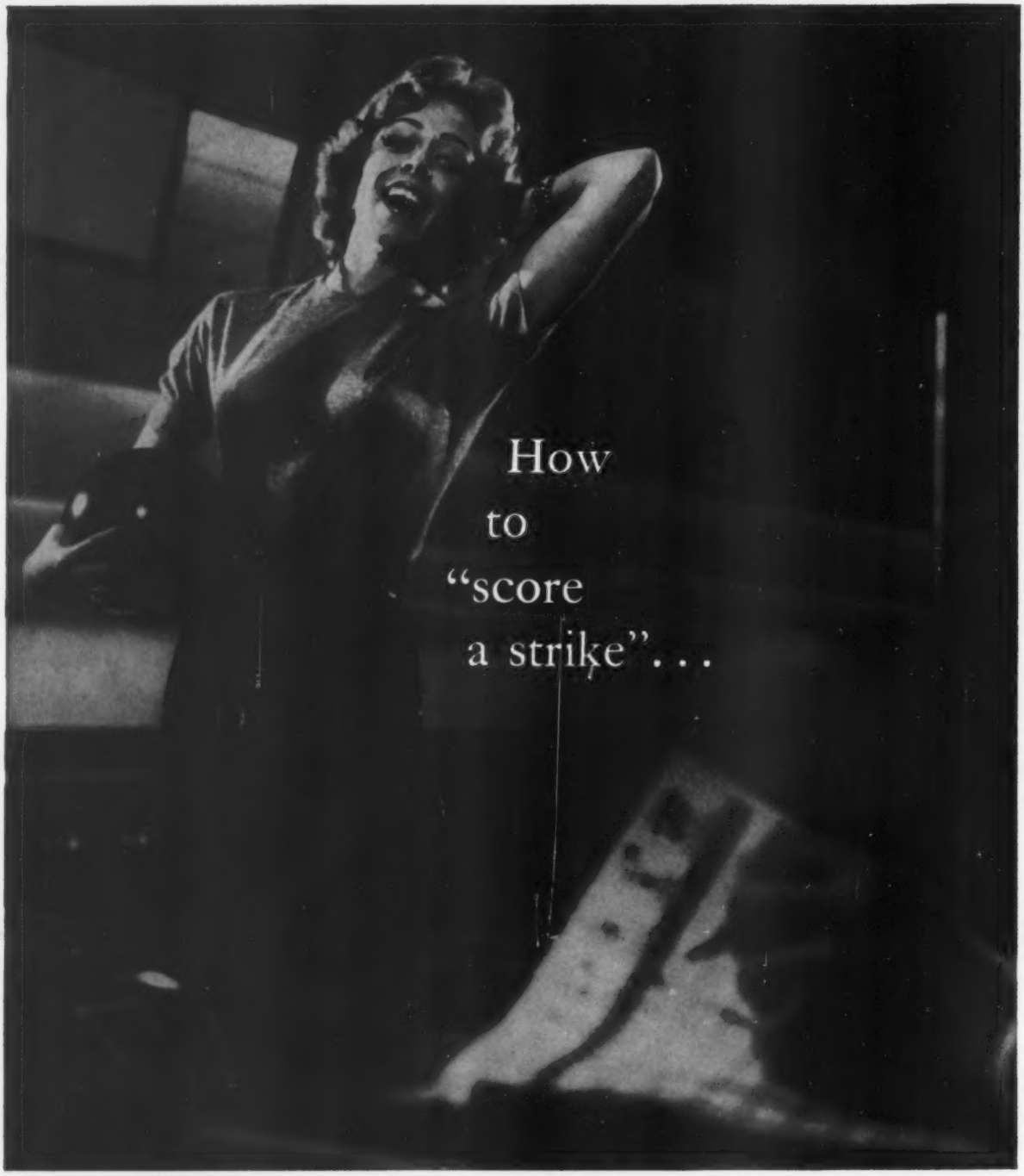
Whatever confections you produce, make them more brightly attractive, keenly tempting with Red Seal Colors—famous for exceptional brilliance, purity, uniformity. Warner-Jenkinson's know-how and facilities are at your service. Write in confidence.

WARNER-JENKINSON MANUFACTURING CO.

Manufacturers of Certified Food Colors, Vanillas, Extracts, Flavors

2526 Baldwin St. • St. Louis 6, Mo.

West Coast: 2515 Southwest Drive, Los Angeles 43, Calif. • Warehouses: Boston, Jersey City, Atlanta

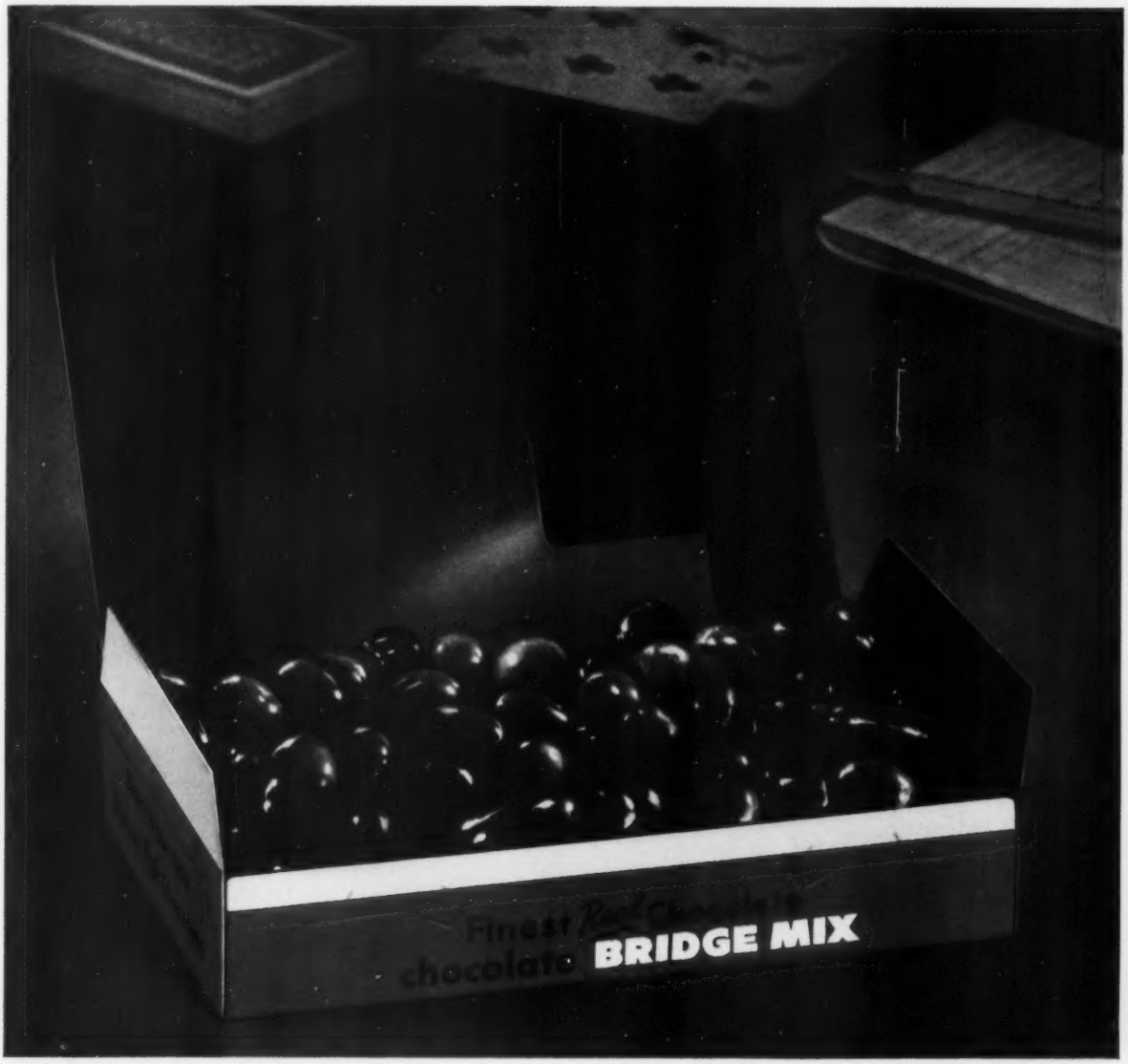


The one factor that always bowls the customer over is quality, and quality is right down our alley. The strict controls and the unhurried processing — helps *you* score with plenty to spare.

See Your Man from...

BLUMENTHAL BROS. CHOCOLATE CO.

MARGARET AND JAMES STS., PHILADELPHIA 37, PA.



Inside Protection with a Flair

How? E. J. Brach & Sons, Chicago, use Rhinelander's board-lining chocolate Glassine paper. Package designers found that, when Rhinelander Glassine is laminated to box board, chocolate oils can't seep through, messy staining is prevented, and the candy contents keep their appetizing Come-Hither-ness.

Brach finds Rhinelander Glassine tops for other candy packaging jobs, such as fluted bonbon cups and candy trays.

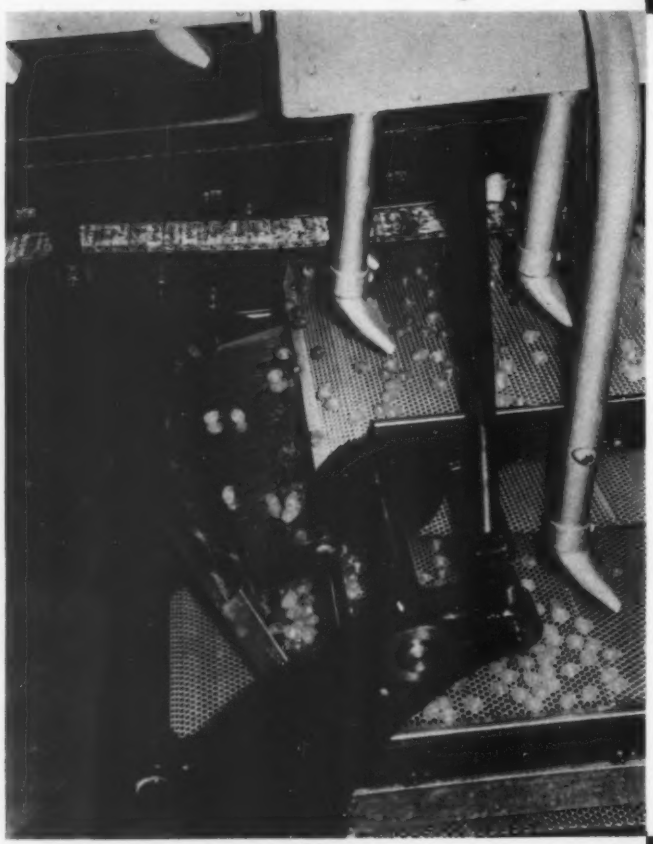
Among its other advantages, Rhinelander Glassine is low in price and handles with remarkable ease on high speed automatic packaging machines.

If your quality product needs maximum protection . . . *with a flair* that entices sales . . . look into economical Rhinelander Glassine or Greaseproof papers. And a range of attractive colors can complement the appearance of the product. *Write today* for more information and samples, stating your application.

Rhinelander
PAPER COMPANY • RHINELANDER, WISCONSIN
Division of St. Regis Paper Company

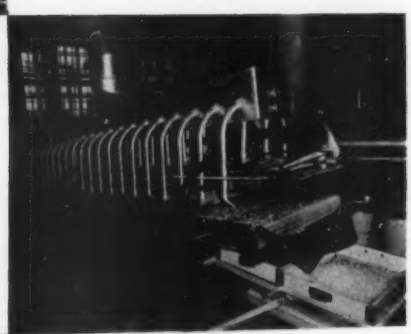
AUTOMATION *through*

Hansella



* **Note**
the wide mesh conveyor belts
on the second (24")
and third stage (40").
Even distribution through
automatic spreading devices
on both ends
NO CANDIES LAYING
ON TOP OF EACH OTHER

COMPACT
COOLING SYSTEM
(18'8" x 4'9")
PROVIDES
MAXIMUM COOLING ACTION
DUE TO
SCIENTIFIC DESIGN AND DISTRIBUTION
OF AIR CHANNELS



3-TIER-COOLERS

TYPE 71E

Hansella

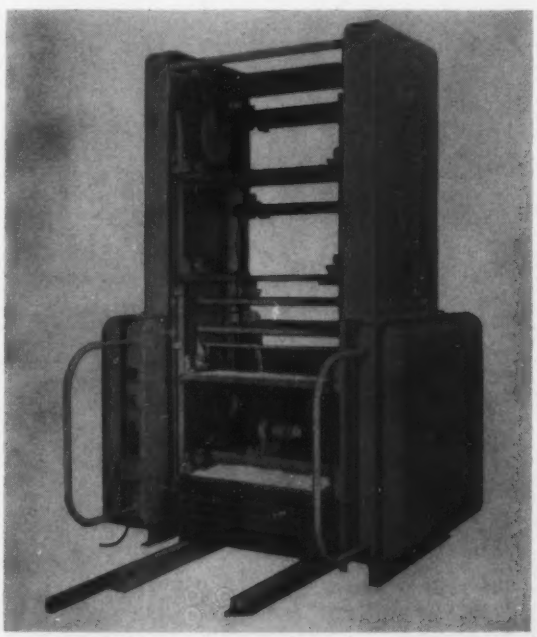
New Products

A machine designed to open and dump multi-wall bags has been put into production. Bags to be opened are conveyed up an incline by a flat wire mesh conveyor, pass under and are sliced in half by a rotating disc knife, and dumped into a hopper below. Prior to being sliced in half the two ends of the bag are impaled on two elongated spikes preventing the bag halves from falling into the hopper. The machine will open and dump twenty 100 lb. bags per minute.

For further information write: Wiretyer Corp., 65 Leliarts Lane, East Paterson, N. J.

A line of stainless steel, sanitary, reciprocating pumps is now available for dispensing volumes adjustable from 0 to 16 ounces per stroke. The pumps may be attached to any rotating mechanism operating at speeds up to 80 R.P.M. making a low-cost semi-automatic filler.

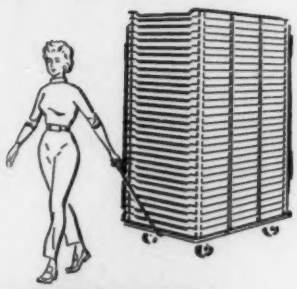
For further information write: National Instrument Company, 2701 Rockwood Avenue, Baltimore 15, Md.



A new starch tray stacker has been developed to operate in conjunction with a starch casting machine. This stacker receives filled starch trays from the casting machine and stacks them to any pre-determined height. Stacks are automatically ejected as soon as they are completed and ejection can be on rails or dollies. This machine is made in England by Baker Perkins, Ltd.

For further information write: Jabez Burns & Sons, Inc., 11th Avenue and 43rd St., New York, New York.

End Sanitation Problems by Drying and Transporting Candy on . . .



TOTELINE Trays

Toteline trays of reinforced molded fiber glass end your sanitation problems, reduce maintenance and lower materials handling costs. Here's how:

- Give you smooth, non-porous surfaces and rounded corners . . . there's no place for dirt to hide.
- Make cleaning easy . . . just dip in hot water or run through steam.
- Eliminate nails, splinters, peeling. Toteline trays retain no odors.
- Speed drying by giving access to air.
- Dust-proof, air-tight model available. (See below.)
- Available in different sizes and colors.
- Integral stacking blocks molded on the outside.

Use the attached coupon below for further information or for trained engineering help on your materials handling problems.

by TOTELINE

MOLDED FIBER GLASS TRAY CO., LINESVILLE, PA.

OFFICES IN PRINCIPAL CITIES AND CANADA

World's Largest Producer of Reinforced Plastic Trays and Tote Boxes

Return the attached coupon with your letterhead for more information

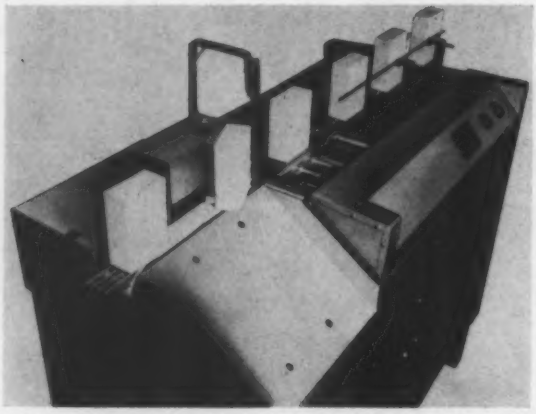
Please tell me more about Toteline Products and how they solve materials handling problems.

☐ I'm interested in the sanitary tray ☐ I'm interested in the dust-proof tray

Name _____ Title _____

Company _____

Address _____ City _____



A checkweigher has been developed that will checkweigh sealed, semi-rigid containers with one flat surface at speeds up to 350 per minute. Individual tension adjustments set the scale for each package size to detect variances of as little as 1/4% of the total package weight. Overfilled or underfilled packages are slid down a chute out of production by a solenoid operated arm. The machine handles sizes from 1-1/2" x 1-1/2" to 10" x 10".

For further information write: FMC Packaging Machinery Division, Stokes & Smith Plant, 4992 Summerdale Ave., Philadelphia 24, Pa.

Formation of packages from sheet plastic without the use of heat or adhesives can now be obtained by use of a new machine which cold-folds and locks unscored die-cut plastic blanks into trays at speeds of 400 to 100 per minute. Low cost transparent packages for complete visibility can be obtained by use of this new process.

For further information write: Plastics Division, Monsanto Chemical Co., Springfield, Massachusetts.

Cellophane bands printed with seasonal designs are available for holiday use. The bands, which are easy to apply and remove, are also available in designs for Valentine's Day, Mothers' Day and other holidays.

For further information write: Continental Can Co., 100 East 42nd Street, New York, New York.

YOUR PRODUCTS DESERVE THE FINEST MOULDS

CHOCOLATE Bruhn MOULDS

MADE BY
HANS BRUHN & CO.
HAMBURG-ALTONA
RUHRSTRASSE 48-56
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SINGLE AND MULTIPLE PATTERN MOULDS FOR HAND AND AUTOMATIC MOULDING

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WE OFFER ALMOST A CENTURY OF EXPERIENCE IN THE ART OF MOULD MAKING

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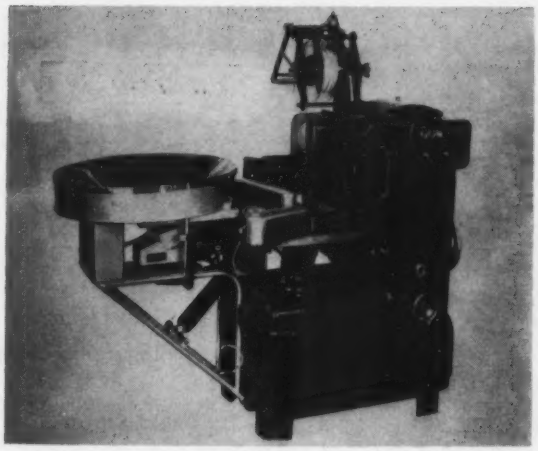
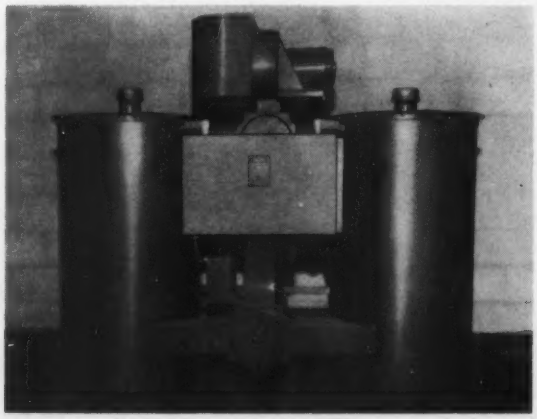


A twist wrapping machine has been introduced which will wrap both solid and filled candies at speeds up to 500 per minute. Printed or unprinted cellophane, or waxed paper may be used with or without understrip of backed foil.

For further information write: Package Machinery Company, East Longmeadow, Massachusetts.



A completely automatic, adsorption dehumidifier is available which handles as much as 700 cubic feet per minute and can remove 300 lbs. of water in 24 hours. The unit can be used for controlled humidity storage, dry air in processing applications, low temperature installations and in combination with cooling equipment for lower cost humidity control without the expense and complications of using re-heat.

For further information write: Universal Dynamics Corp., Box 9814A, Arlington, Va.

A bulletin is available describing the method of operation of a density gauge used for continuous, non-contact measurement and control of percent of solids in slurry, specific gravity of a liquid and detection of interface position in pipelines.

For further information write: Bulletin SG, The Ohmart Corp., 2236 Bogen Street, Cincinnati 22, Ohio.

FOR COOLING SLABS • BAND OVENS • BELTS • TRAYS • PANS

CONFECTO GREASE®

RELEASING COMPOUND

- CONTAINS NO MINERAL OIL, NO ANIMAL FATS
- DOES NOT TURN RANCID
- ECONOMICAL TO USE
- EASILY APPLIED — CAN BE SPRAYED

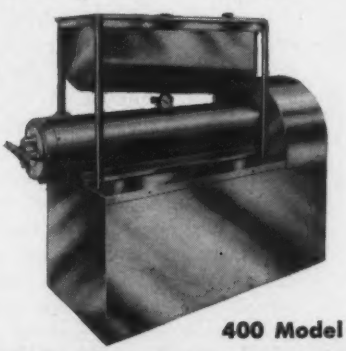
For more information about CONFECTO GREASE® write to

International Foodcraft Corp.

184 North 8th Street **Brooklyn 11, New York**

Only the *INSTANT* and *CONTINUOUS* FONDANT MACHINE

gives you these many advantages.



400 Model

Creams & Cools Simultaneously,
No waiting, creams HOT syrup Instantly,
No expensive pre-cooling equipment required,
Finer, Smoother Fondant,
Fondant ready to use, without delay,
Produces more, in less space,
Saves valuable floor space,
Lower production cost,
Lower investment cost,
Proven the world over,

Made of Lifetime Stainless Steel & Aluminum.

CONFECTION MACHINE SALES CO.
407 S. DEARBORN ST., Chicago 5, Ill.

Please send information on the Master Model and the new "400" model, to

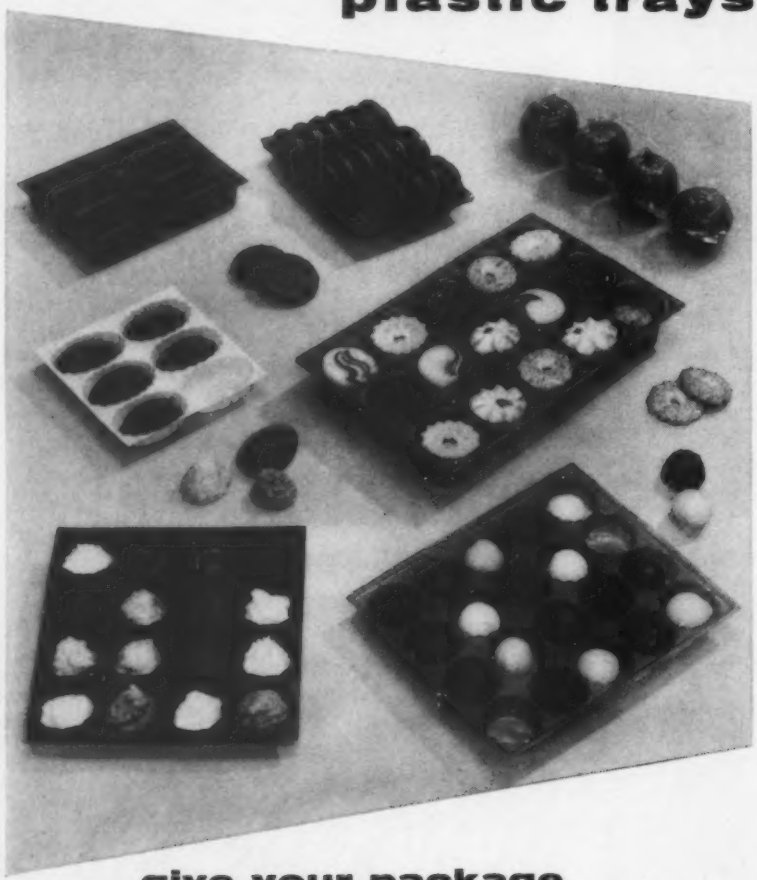
Name_____

Company_____

Street_____

City_____ State_____

PAK-APEAL
plastic trays



give your package

SALES APPEAL

Candies and cookies, look better and sell faster in PAK-APEAL plastic trays.

PAK-APEAL is a new idea in packaging . . . consisting of a high quality, attractively designed, multiple unit plastic tray that is vacuum formed to fit your candy or cookie product perfectly. Each tray is also custom designed to fit snugly inside your present outside container.

Take the first step to . . . increased product sales appeal . . . lower production cost . . . maximum product protection . . . by writing today for full details.

NPC NATIONAL PACKAGING CORPORATION

3002 BROOKLYN AVE. • FORT WAYNE, INDIANA

Branch Offices: NEW YORK, N. Y. • CHICAGO, ILL. • DALLAS, TEX. • LOS ANGELES, CALIF.

Technical Literature

Processing of Food Fats—A Review

J. H. Sanders, Food Tech., Vol. 13, *No.* 1 (1959)

Refining or modifying of most domestic vegetable and animal fats is necessary to meet requirements of distribution, end-use or palatability. The conventional process steps in fat refining are described. Information is given on hydrogenation, deodorization, plasticizing, polymorphism in crystal structures, interesterfication and winterizing. Process flow charts are included.

Application of Gas Chromotography in the Confectionery Industry

N. A. Lund, Perfum. & Essen. Oil Record, Vol. 50, *No.* 2 (1959)

Fats and flavors are suitable for analysis by G. C. Terpenes may be found in some peppermint oil samples. Complex flavors in solvents are less amenable to analysis by G. C. than pure essential oils. Fats must be saponfied and resulting fatty acids converted to methyl esters prior to analysis by G. C. but cocoa butter may be identified from substitutes. For routine and research work in confectionery, G. C. may prove to be a worth-while tool. The aroma of cocoa butter, chocolate and roasting beans are problems the answer to which may be solved by G. C. Transcitral, identified by G. C., was found to be a desirable component of a soluble lemon flavor.

Interaction of Sucrose and Calcium Cyclamate on Perceived Intensity of Sweetness

Joe Kamen, Food Research, Vol. 24, *No.* 3 (1959)

Pure solutions of the above sweetening agents and mixtures of these solutions were rated by judges for intensity of sweetness. At the highest and lowest solution concentrations, the perceived intensities of the mixtures did not depart markedly from the perceived intensities of the average of the pure solutions comprising the mixtures. At moderate solution concentrations, however, the perceived intensities of the mixtures were significantly higher than the intensities of the pure solutions.

Composition of "Floc" Formed in Acidified Sirups from Refined Granulated Cane Sugars

Mack F. Stansbury and Carroll L. Hoffpauir, Jour. Agr. and Food Chem., Vol. 7, No. 5 (1959)

Refined granulated cane sugar occasionally contains trace amounts of material which gradually precipitates from acidified sirups. The major components are starch, lipides (wax), protein, ash constituents and decolorizing carbon. Test procedures were investigated and an improved method adapted from a test currently used by the beverage industry appears to offer most promise.

The Effect of Household Table Salt on the Whipping Quality of Egg White Solids

Carol Sechler, Leta G. Maharg and Margaret Mangel, Food Research, Vol. 24, No. 2 (1959)

Selected levels of household salt were used to test their effect on the whipping quality and stability of foam from pan and spray dried egg albumens. These concentrations of salt seemed to have little effect upon the ease of reconstituting the dried albumens. There appears to be little beneficial effect of salt upon the foam of the dried albumens within the flavor acceptable range. Although a slight increase in specific gravity was noted, the salt apparently decreased both foam volume and foam stability within this range. Salt concentrations above the acceptable flavor range had little effect on corrected specific gravity but did tend to stabilize the foam until virtually no breakdown occurred. Although a considerable variation in volume was recorded throughout, there was a decrease in volume as compared to the "no salt" sample. In general, it was necessary to lengthen whipping time as salt concentration in the foam was increased.

Factors Affecting Water-Vapor Transfer Through Food Packaging Films

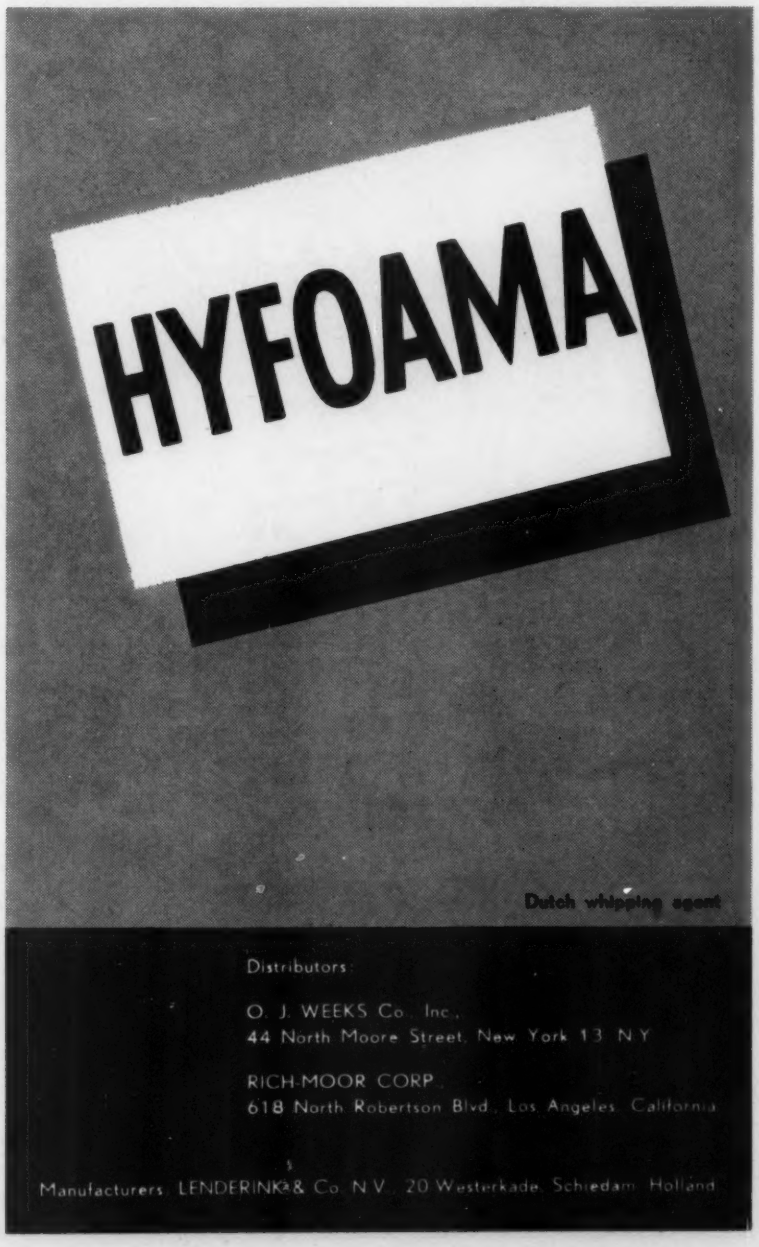
M. Karel, B. E. Proctor and G. Wiseman, Food Tech., Vol. 13, No. 1 (1959)

A seven page report is given of studies to determine the W-V permeability of commonly used packaging films at various conditions of temperature and humidity and to investigate the applicability of theoretical equations for the prediction of W-V permeability at a given temperature and humidity condition on the basis of data obtained for other conditions. The results obtained and their practical and theoretical significance are discussed.

Foodcolours in Confectionery

L. Kuiper, General Assembly, Association International Manufacturers of Confectionery, Brussels, May, 1958.

This little pamphlet, 23 pages total, printed in both English and French, discusses confectionery colors from several standpoints, public welfare and usage in candy. An important phase of this booklet is the series of charts listing the permitted synthetic food colors in various countries of the world with an appreciation by the experts in the field. A study of data presented shows that the experts have reached no conclusion as to agreement on the safety of colors for human consumption. This is recommended reading for color manufacturers who wish to keep informed as to colors permitted elsewhere than in the U. S. and who are in touch with the Food and Drug Administration color's work.


HYFOAMA
Dutch whipping agent
Distributors:
O. J. WEEKS Co., Inc.,
44 North Moore Street, New York 13, N.Y.
RICH-MOOR CORP.
618 North Robertson Blvd., Los Angeles, California
Manufacturers: LENDERINK & Co. N.V., 20 Westerkade, Schiedam, Holland

Starch Chemistry for the Food Technologist

L. M. Waldt and D. Kehoe, Food Tech., Vol. 13, *No.* 1 (1959)

This three page review of starch chemistry emphasizes viscograph charts and tries to explain the behavior of cereal and root starches under various food manufacturing conditions. The viscosity and gel characteristics of starches are discussed. Note is made of the modified or specialty starch products and suggestions are made as to possible uses.

Carob Varieties and Composition

R. J. Binder, J. E. Coit, K. T. Williams, and J. E. Brekke, Food Tech., Vol. 13, *No.* 3 (1959)

Carob or St. John's bread, has been subjected to investigation and 30 varieties analysed for nutritive factors. Currently, imported carob is manufactured into a flour in the U. S. This has found use in foods and pharmaceuticals. When the flour is incorporated in confections, a flavor closely resembling that of cocoa or chocolate is imparted.

- Suitable for plain, milk, or nut chocolate masses
- Fully automatic—accurate—simple to operate
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In operation at leading U. S. and Canadian plants

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Hastings House, Norfolk St.,
London W.C.2. Eng.

Prevention of Stickiness and Graining in Stored Hard Candies

R. Heiss, Food Tech., Vol. 13, *No.* 8 (1959)

Through many tests, some knowledge has been gained regarding the changes undergone by hard candies during their shelf life. Stickiness and all crystallization processes in the outer layer of hard candies depend upon the concentration of the sugar solution. The rate of graining increases with increasing relative humidity. Two stickiness peaks are reported for hard candies. Cooking formulations should consider relative humidities to which the finished candies will be exposed during storage and their expected shelf life. Eight pages of interest to the hard candy technologist.

Ultrasonic Defrosting of Frozen Foods

Aaron L. Brody and G. N. Antonevich, Food Tech., Vol. 13, *No.* 2 (1959)

Hamburger, strawberries and liquid whole egg, three representative frozen foods, were subjected to ultrasonic defrosting. The streaming effect was very pronounced in liquid whole eggs. High energy requirements for practical thawing rates in frozen liquids and neglible effects in solid foods indicate limitations of U. D. for thawing. At present time, authors state that U. D. does not appear feasible.

Effects of Environmental and Processing Factors on the Citral Content of Lemon Oil

W. L. Stanley and S. H. Vannier, Food Tech., Vol. 13, *No.* 2 (1959)

The characteristic flavor and aroma of lemon oil are due to citral. A new, specific colorimetric method for citral determination was developed and is reported. This method has been used to study the efficiency of commercial processing of lemons. Major losses of citral occur during the peel pressing. Variations in the citral content of the fruit are reported.

Essential Oils and Related Products

Ernest Guenther, Kurt Kulka and J. A. Rogers, Anal. Chem., Vol. 31, *No.* 4. (1959)

A nine page review covering applied analysis of essential oils and related products for past two years. Extensive references are included.

The MANUFACTURING CONFECTIONER'S

Candy Clinic

The Candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Some samples represent a bona-fide purchase in the retail market. Other samples have been submitted by manufacturers desiring this impartial criticism of their candies, thus availing themselves of this valuable service to our subscribers. Any one of these samples may be yours. This series of frank criticisms on well-known branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of The MANUFACTURING CONFECTIONER.

Panned Goods; 1¢ Pieces

Code 11F9
Panned Hard Candy Blossoms
1 lb.–79¢

(Purchased in a department store, Chicago, Ill.)

Sold in Bulk: Pieces are wrapped in printed colored cellulose.

Piece:
Finish: Fair
Panning: Good
Coating: Good
Centers:
Colors: Good
Texture: Good
Taste: Good

Remarks: A good eating confection but highly priced. There are a number of similar pieces made in the U.S.A. priced at about 60¢ the pound.

Code 11E9
Milk Chocolate Panned Drops
1 lb.–79¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good for this type of confection

Container: Folding box, end fill. Printed in buff, brown, white and red. Imprint of pieces in colors.

Drops:
Finish: Good
Panning: Good
Colors: Good
Center: Chocolate: very good

Remarks: One of the best pieces of this kind we have examined this year. This package would be a "natural" for Halloween with a Halloween cellulose band which could be removed if any of the packages were left over.

Code 11C9
Butterscotch
1 lb.–79¢

(Purchased in a department store, Chicago, Ill.)

Sold in Bulk: Each piece is wrapped in gold foil, name embossed on foil. Piece is a hard butterscotch.

Butterscotch:
Color: Good
Texture: Good
Flavor: Good

Remarks: The best butterscotch of this kind we have examined this year.

Code 11H9
Hallowe'en Assorted Buttercreams
1 lb.–29¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good

Container: Cellulose bag printed in orange and white.

Buttercreams:
Colors: Good
Finish: Good
Texture: Good
Molding: Good

Remarks: The best buttercreams of this type we have examined this year in this price field.

Code 11G9
Bridge Mix
1 lb.–47¢

(Purchased in a chain variety store, Chicago, Ill.)

Sold in Bulk:

Assortment: Contained caramel, malted milk balls, mint creams, almonds, peanuts, fudge and raisins.
Panning: Good
Finish: Good
Coatings: Dark and light: good
Centers: All were good

Remarks: Very well made panned pieces and good eating.

Code 11B9
Halvah
6 ozs.–25¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good

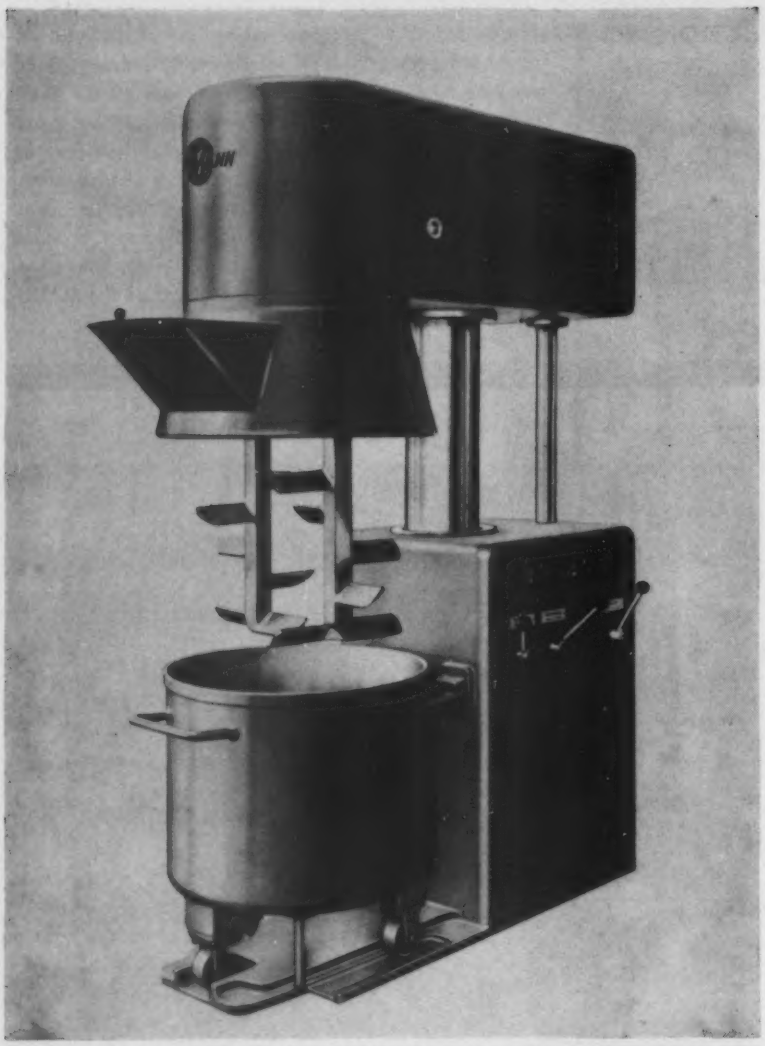
Container: Round tin can, key opener. Printed in lavender, yellow and brown.

Halvah: Contained almonds, chocolate
Color: Good
Texture: Good
Taste: Good
Almonds: Good

Remarks: The best Halvah we have examined. Very good eating and cheaply priced at 25¢ for 6 ozs.

Candy Clinic Schedule For the Year

JANUARY–Holiday Packages; Hard Candies
FEBRUARY–Chewy Candies; Caramels; Brittles
MARCH–Assorted Chocolates up to $1.15
APRIL–$1.20 and up Chocolates; Chocolate Bars
MAY–Easter Candies; Cordial Cherries
JUNE–Marshmallows; Fudge
AUGUST–Summer Candies
SEPTEMBER–Uncoated & Summer Coated Bars
OCTOBER–Salted Nuts; Gums & Jellies
NOVEMBER–Panned Goods; 1¢ Pieces
DECEMBER–Best Packages and Items of Each Type Considered During the Year.



THE LEHMANN PLANETARY MIXER

improves output and reduces cost

No engineering detail has been overlooked to make this modern Mixing and Kneading Machine the most efficient and economical in its field. For the intensive and uniform mixing of highly fluid, viscous and pasty materials it is unsurpassed.

The planetary action is uniquely effective. Two mixing spindles equipped with helically arranged vanes move along the tank wall while rotating at high speed around their own axes. The mixing mechanism is raised and lowered automatically.

Swivel, tilting, run-out or stationary tanks are provided in capacities from 1 to 350 gallons. The use of several tanks permits almost continuous production. The machine is available in several types and power specifications. Stainless steel or other metals are obtainable if required. The unit can be cleaned quickly when frequent changes are desired in shade or type of product processed. Maintenance costs are unusually low.

Write or telephone for prices and further information.

LEHMANN® world renowned in processing machinery

J. M. LEHMANN COMPANY, Inc.

550 NEW YORK AVENUE, LYNDHURST, N. J.

11J9
Breath Perfume Candies
1 oz.—10¢

(Purchased in a drug store, Oak Park, Ill.)

Container: Folding box, cello window. Printed in pink, white and blue.

Candies: Candies are a very small hard candy drop.
- **Colors:** Good
- **Texture:** Good
- **Flavors:** See remarks

Remarks: Some years ago there were a number of pieces on the market, cordials with perfume flavors, etc. It may be the time to bring this type of confection back again.

11L9
Peppermint Sugar Mints
1⅛ ozs.—5¢

(Purchased in a drug store, Chicago, Ill.)

Container: Folding box, end fill. Printed in green and white. Cellulose wrapper.

Mints:
- **Color:** Good
- **Texture:** Good
- **Peppermint Flavor:** Good

Remarks: There are a number of mints like these on the market but we think these mints are the best. Many of the others are too hard and most lack a good peppermint flavor. Also, some are off color.

Code 11A9
Hard Candy, Ginger Center, Drops
1 lb.—59¢

(Purchased in a department store, Chicago, Ill.)

Sold in Bulk: Pieces are wrapped in printed cellulose.

Piece: Piece has a toffee jacket and center has a ginger flavor.
- **Jacket:** Good
- **Center:**
  - **Color:** Good
  - **Texture:** Good
  - **Ginger Flavor:** Good

Remarks: A good eating piece, very pleasant ginger flavor.

11D9
Jelly Beans
1 lb.—29¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good

Container: Cellulose bag printed in yellow and red.

Jelly Beans:
- **Colors:** Orange and black: good
- **Finish:** Good
- **Panning:** Good
- **Center:**
  - **Color:** Good
  - **Texture:** Good
  - **Flavor:** Good

Remarks: A very good eating jelly bean. Very good workmanship.

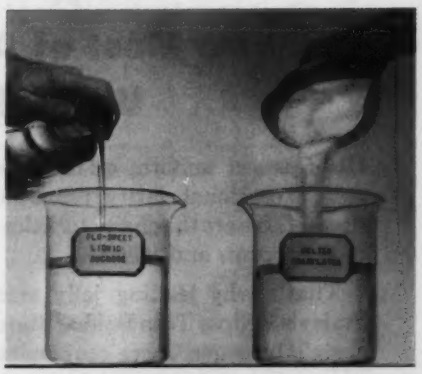
Flo-Sweet quality sells more sweets!

Flavor . . . body . . . texture—these are just some of the things that spell quality in today's confectionery.

In candy kitchens, quality-conscious managers use Flo-Sweet for precise quality control, coupled with important savings in costs. They have found the Flo-Sweet liquid sugar system ideal for streamlining production and simplifying housekeeping. They have increased production with new techniques that cut kettle time by as much as one-third, especially important during peak seasonal demands. They have selected, from the large Flo-Sweet family of fine sweeteners, those best suited to their own specific needs. They have realized important savings—a typical candy plant using 100,000 bags of sugar a year can save $64,475 annually with Flo-Sweet.

You can easily verify Flo-Sweet's higher quality yourself, through the simple test shown at the right. Just dissolve some of your favorite granulated . . . concentrate it to 67° Brix . . . and compare its color with that of Flo-Sweet liquid sucrose.

Your Flo-Sweet engineer will be glad to help you explore ways to use Flo-Sweet liquid sugars in cutting costs while boosting quality. Why not consult him soon?

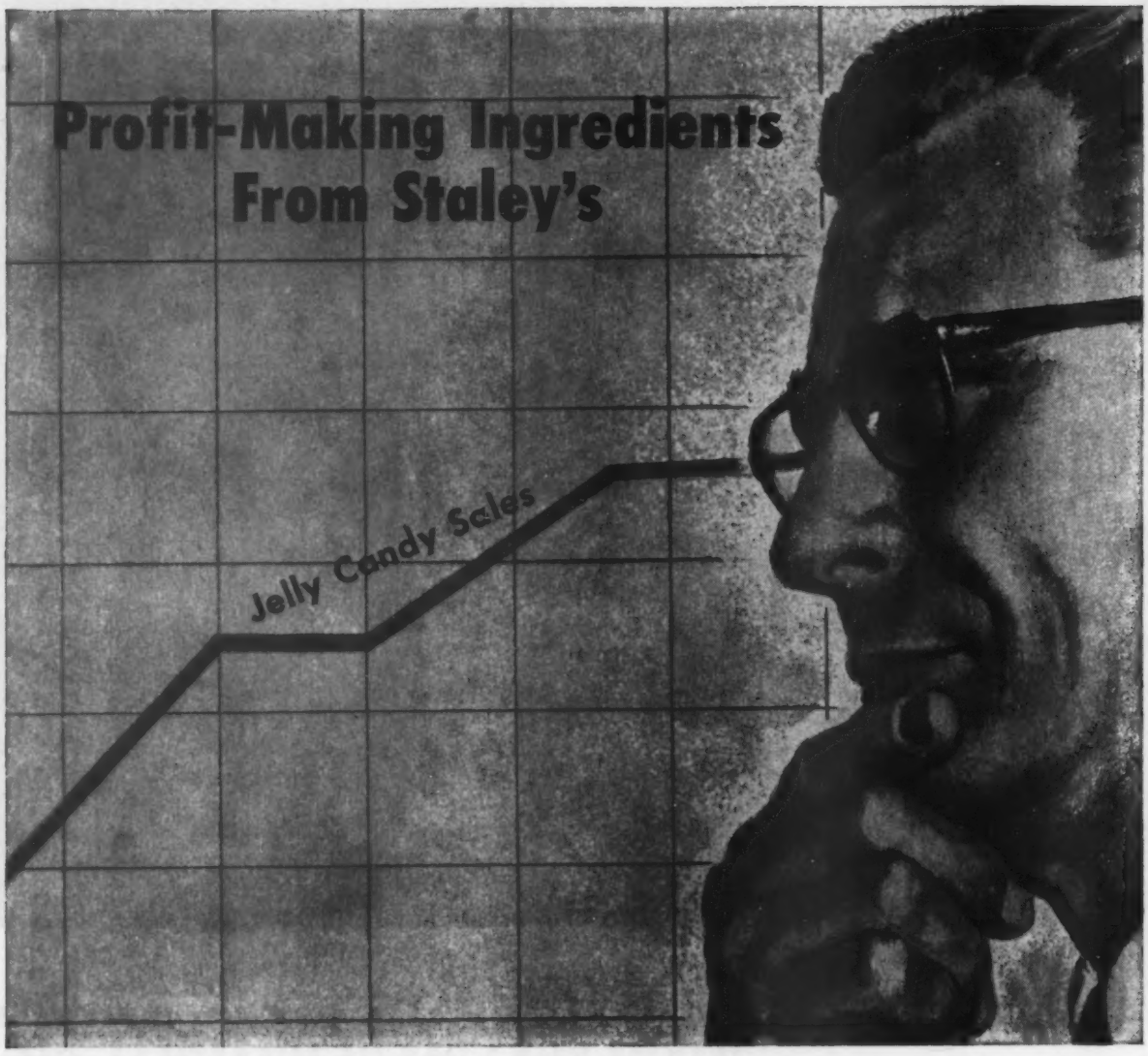


REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET



Why Do Most of America's Leading Jelly Manufacturers Use Eclipse® Thin Boiling Starches?

Unsurpassed uniform quality, just-right tenderness, exceptional clarity, remarkably smooth texture—these are the characteristics consumers want most in gums and jellies.

That's why leading jelly manufacturers use Staley's Eclipse Thin Boiling Starches. They know there's no surer, more economical way to incorporate these customer-winning qualities in *their* candies.

They know, too, they can always depend on Eclipse to give the same fine results every time. Thanks to its high degree of uniformity—they can consistently produce jelly candies that are never tough—never cloudy—never rubbery—but always with the appearance and eating qualities that keep customers reaching for their brand again and again.

For the complete story on how Eclipse Thin Boiling Starches can improve your starch jellies and for information about Staley's complete line of confectioners' starches, see your Staley Representative or write to:

A. E. STALEY MFG. CO., DECATUR, ILL.
Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

Eclipse®
THIN BOILING STARCHES

Helpful Books for Candy Plant Executives

Confectionery Analysis and Composition

by Stroud Jordan and Katheryn E. Langwill

This volume, first published in 1946, is still the only published reference work on the subject of confectionery analysis. It concerns itself with applicable data that covers composition of basic raw materials as well as that of the finished confections in which they have been employed.

Your Future Factory

by V. P. Victor, M.E., P.E.

A twenty page booklet contains the essentials of modern factory planning. It includes plant layout, process design, materials handling, building and structure, production line and financial planning. This is a reprint of the five part article which appeared in The Manufacturing Confectioner in 1958. Mr. Victor is well qualified to advise on factory layout since he has had considerable experience in such planning together with experience in design of candy machinery and process development. He is a consulting engineer with headquarters in New York City.

How to Salvage Scrap Candy

by Wesley H. Childs

This booklet is a complete revision of the author's work "Modern Methods of Candy Scrap Recovery" published in 1943. A considerable amount of information has been collected since that time on methods and techniques of salvaging scrap candy. This booklet covers all types of candy, and gives many practical and economical ways of converting scrap candy into a useful form for re-use.

A Textbook on Candy Making

by Alfred E. Leighton

Here is a textbook where the reader can learn the basic fundamentals of candy making, the "how" and "why" of the various operations in non-technical terms. Particular attention is given to the function of raw materials, and why each is included in a formula.

The Candy Buyers' Directory The Directory of Candy Brokers

1959 Edition

The Candy Buyers' Directory is an alphabetical and classified directory of wholesale candy manufacturers giving information on what type of candy is made by each firm, and in some cases the type of packaging used. The Directory of Candy Brokers is a geographical listing of over 600 candy brokers giving the accounts that they handle, the territory covered and the number of salesmen.

Profits Through Cost Control

by Frank Buese and Eric Weissenburger

This material deals with the problems of cost control in candy plants including planning for profit. The emphasis is on planning operations so that a profit will be made, and in early detection of those factors which will adversely affect profit.

- ☐ **How to Salvage Scrap Candy $2.00**
- ☐ **Your Future Factory $2.00**
- ☐ **A Textbook on Candy Making $6.00**
- ☐ **The Candy Buyers' Directory and The Directory of Candy Brokers $5.00**
- ☐ **Confectionery Analysis and Composition $6.00**
- ☐ **Profits through Cost Control $2.00**

Book Department
The Manufacturing Confectioner
Publishing Company
418 N. Austin Blvd.
Oak Park, Illinois

Date.....

Gentlemen:

Enclosed is my check for $.....to cover the cost of the books I have checked at the left.

Name ..... Title .....

Firm .....

Street .....

City ..... Zone ..... State .....

LATINI'S FAMOUS CHOCOLATE SPRAYING SYSTEM

Unexcelled for panned goods and pre-building for the enrober.

Increases production

Eliminates doubles and clusters

Uniform coating

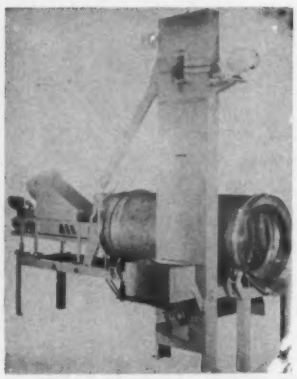
Low labor factor

Available in 4-pan Systems and up. A non-skilled help operation with a daily output of approximately 1,000 pounds per pan.

LATINI CHOCOLATE SPRAYING SYSTEM

Hohberger Cream Machine

Up to 2,000 pounds per hour. Straight sugar or with any amount of corn syrup. NEW: Special-sized Dome for liquid sugar users. No pre-cook kettles required.



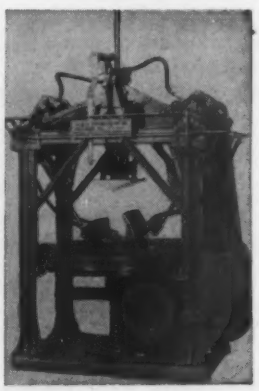
Latini Sugar Sander Guaranteed To Properly Sand The Output of any Starch Machine

Non-corrosive metals wherever sugar and steam meet.

Hohberger Continuous Hard Candy Cutter

Waffles, pillows, chips, or straws. Up to 150 feet per minute. Perfect sealing on filled pieces.

BERKS HARD CANDY MIXER



Mixes color, flavor and acid in 75 to 125 pound batches at rate of 1000 lbs./hr., 10% scrap may be included. Saves labor and floor space. Assures uniform mixing and constant rate of production through the day.

Representative: *John Sheffman, Inc.*

152 West 42 Street **New York 36, N.Y.**

11K9
Gum Candies
1 oz.—5¢

(Purchased in a drug store, Chicago, Ill.)

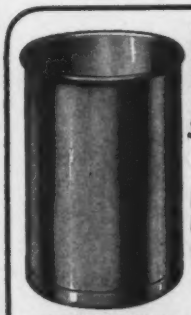
Appearance of Package: Good
Container: Folding box, end fill. White board printed in red and blue. Imprint of gums in colors.
Gums:
Colors: Good
Finish: Good
Molding: Good
Texture: Good for this type of confection
Flavors: Good
Remarks: This 5¢ package has been on the market many, many years and we always find it the same. We think it is the best of its type on the market.

Code 1119
Vienna Bon Bons
1 lb.—69¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good
Container: Cellulose bag printed in blue and gold. Metal clip on top.
Pieces: Pieces are a hard candy plastic piece, wrapped in wax paper. Outside paper wrapper printed in blue, imprint of fruits in colors.
Gloss: Very little
Jacket: Good
Centers:
Colors: Good
Texture: Good
Flavors: Good
Remarks: Very well made plastic hard candy. Very good centers and thin jackets. Cheaply priced at 69¢ the pound.

All subscribers are entitled to send samples of their candy to the Candy Clinic for analysis and report. Address duplicate samples, with approximate retail price, to The Candy Clinic, c/o The Manufacturing Confectioner, 418 N. Austin Blvd., Oak Park, Illinois.



STANcase EQUIPMENT

STAINLESS STEEL DRUMS

MODEL 30--30 GAL.
MODEL 55--55 GAL.
(Covers available)

ECONOMY EQUIPMENT

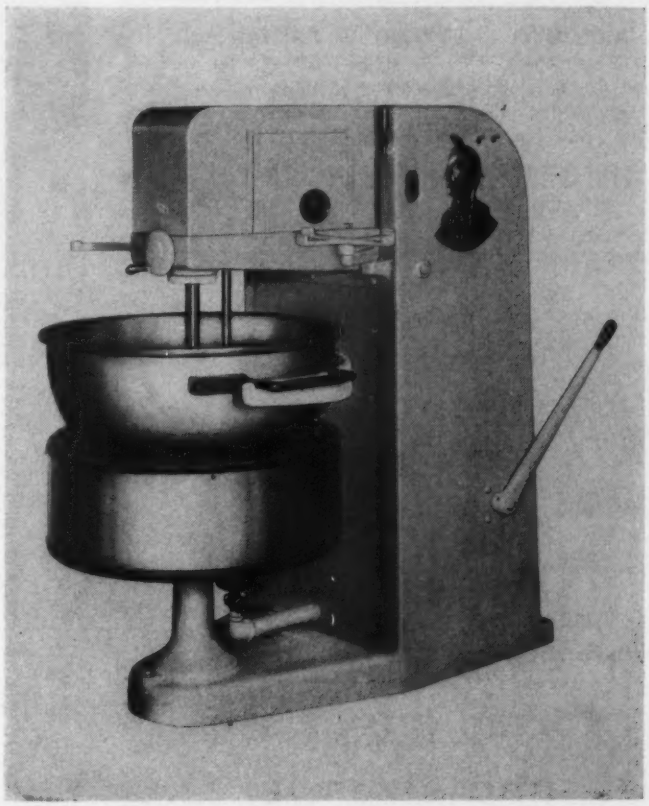
RUGGEDLY CONSTRUCTED FOR LIFE TIME WEAR.
FULLY APPROVED BY HEALTH AUTHORITIES.

Manufactured by
The Standard Casing Co., Inc.
121 Spring St., New York 12, N. Y

SAVAGE LATEST FIRE MIXER

MODEL S-48

Thermostatic Gas Control—Variable Speed



The Savage Latest Fire Mixer, Model S-48, is Streamlined and Sanitary and has many new features and conveniences:

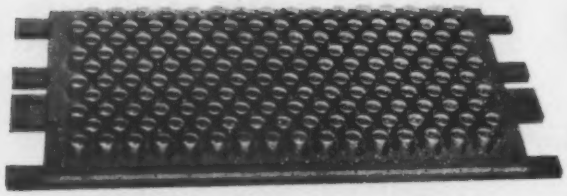
Automatic Temperature Control
Variable Speed from 30 to 60 RPM
Break-back within floor space 32" x 48"
Aluminum Base and Body Castings
Atmospheric Gas Furnace with Stainless shell
Removable Agitator, single or double action
Stainless Cream Can and Stainless Drip Pan
Copper Kettle 24" diameter 12½" deep or 16" deep

You can save labor and obtain uniform batches by setting the thermostat for degree cook desired. It cooks and mixes batches of caramel, peanut brittle, peanut candies, fudge, nougat, gum work, and with double action agitator is ideal for coconut candies and heavy batches.

Your inquiry invited

SAVAGE BROTHERS COMPANY

2638 Gladys Ave. Chicago 12, Ill.



ALUMINUM CANDY MOULD PATTERNS
for use with mogul starch equipment

We are now using the new hard burnished finish which eliminates the break-in period. They pay for themselves in a few weeks.

CINCINNATI ALUMINUM MOULD CO.
Dept. M, 1834 Dana Ave., Cincinnati 7, Ohio

ALWAYS AT YOUR SERVICE

In Cocoa Since 1899

EMIL PICK CO.
COCOA BROKERS

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COCOA BEANS – COCOA BUTTER
Cocoa and Chocolate Products

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forms sugar rope
—and sizes it

AUTOMATICALLY!

Batch Former Model HKR
Rope Sizer Model HZU

Cut costs and speed production of filled candies by *automating* with the Otto Haensel Junior Batch Former, Rope Sizer machine. This combination unit makes possible, for the first time, automatic forming of filled sugar rope, automatic sizing of rope to a precise diameter and automatically controlled continuous feeding.

Write for full details on this and other confectionery equipment by Otto Haensel Junior that can give you higher production at lower cost.

OTTO HAENSEL MACHINE CO.
60 East 42nd St., New York 17, N. Y.

Presentation made in Philadelphia

Horst Pelckmann, German Consul, presents the Knight's Cross of the Order of Merit of the Federal Republic of Germany to Hans Dresel, president of the American Association of Candy Technologists, in honor of his establishing cooperative activity between the two countries in the confectionery and food field. The presentation was made in Philadelphia on October first at the AACT meeting.

Confectionery Brokers

G & Z BROKERAGE COMPANY
New Mexico—Arizona El Paso County Texas
P. O. Box 227 ALBUQUERQUE N. Mex.
Personal service to 183 jobbers, super-markets and department stores. Backed by 26 years experience in the confectionery field. We call on every account personally every six weeks. Candy is our business.

LIBERMAN SALES COMPANY
324 Joshua Green Bldg.
1425 Fourth Ave.
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I. Liberman Cliff Liberman
Terr.: Wash., Ore., Mont., Ida., Nevada, Utah

HARRY N. NELSON CO.
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SAN FRANCISCO 7, CALIF.
Established 1904
Terr.: Eleven Western States

RALPH W. UNGER
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2608 Belmar Place
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Confectionery Broker Representing Manufacturing Confectioners Since 1925
Territory: Pennsylvania excluding Philadelphia.

Sesame Crunch

BY HERB KNECHTEL
Knechtel Laboratories, Inc.

Formula:

10 pounds sugar
5 pounds corn syrup
3 pounds honey
4 ounces butter
4 ounces salt
14 pounds toasted sesame seed

Procedure:

Cook the sugar, corn syrup, honey and salt with two quarts of water to 270°F. Then add butter and stir while cooking to 285°F. Turn the fire down low and, while stirring, gradually add five pounds of the sesame seed. As soon as it is mixed in well, remove from the fire and stir in the remaining sesame seed.

Pour onto an oiled marble slab and fold several times, as with regular hard candy. Roll out into several thin sheets. The formula can also be spun out, as with regular hard candy, and fed through a drop roller.

Sesame seed has long been strictly an imported item from Central America. Recently, however, it has been grown in important amounts in Texas, and will soon become a familiar domestic food ingredient. With this formula as a starter, there are probably many other items in which you could use this very nutritive and delicious seed.

NEWSMAKERS

Reynolds Metals Company will exhibit five "Reycon" packaging machines at the PMMI show in New York City, November 17-20. The equipment has been built by commercial machinery manufacturers to help automate new aluminum packaging ideas. Machines exhibited will include the "Reycon Tuckwrap" (Hayssen model), the model 310 automatic closing machine, the model 210 pneumatic closing machine, model 200 pedal-operated closing machine and the model 100 hand-operated closing machine.

Lawrence S. Schleicher has joined **A. Klein & Co., Inc.,** New York manufacturers of heart and fancy paper boxes. Mr. Schleicher will make his headquarters in St. Louis.

The Groen Manufacturing Company, manufacturers of steam jacketed kettles, tanks and bulk milk coolers, has recently moved into a new plant at 1900 Pratt Boulevard in Elk Grove Village, Illinois. The completely modern building has 80,000 square feet of manufacturing space all on one floor.

The board of directors of **General Foods** has elected **Charles G. Mortimer** chairman and **Wayne C. Marks** president of the corporation. The board also named **Herbert M. Cleaves, C. W. Cook** and **John A. Sargent** executive vice presidents.

Milprint, Inc. has produced a 17 minute movie dealing with the subject of film and foil laminations and polyethylene extrusions. The film shows the purpose behind different laminations and views the precision workings of a lamination and a poly extruding machine in action.

McCormick & Company, spice and extract house, has established a commercial development department and merged its advertising and sales promotion departments. **Philip B. Schnering** will head the new department.

National Packaging Corporation, Fort Wayne, Indiana, has appointed **Frank H. Kimball** vice president in charge of West Coast operations. Mr. Kimball's headquarters will be at 2330 West Third Street, Los Angeles, Calif.

A new candy and chocolate machinery company called **Euromac** has been formed to represent a number of European machinery manufacturers.

Licorice Pieces for Candy makers

Ready-cut for panning. The easy, economical way to make your own licorice lozenges.

Write to-day for samples and prices to:-

C.W.S LTD., EXPORT DEPT.

P.O. BOX 53, MANCHESTER 4, ENGLAND

speed makes the difference!

CARAMELS CUT and WRAPPED EVERY MINUTE

WITH IDEAL HI-SPEED WRAPPING MACHINE

You can depend on Ideal to do the job faster, at less cost, with maximum efficiency. That's why Ideal Special Caramel Wrapping Equipment is the preferred equipment . . . and it saves personnel—two operators are all that are required for this automatic machine.

Write for detailed brochure.

Established 1906

IDEAL WRAPPING MACHINE COMPANY

MIDDLETOWN, NEW YORK, U.S.A.

Announcing - - -

EUROMAC, Inc.

"a new dimension in machinery service"

ROSE 5 I. S. T. WIST WRAPPER

put: 400 to 450 pieces per minute depending on shape of piece

The Rose 5 I. S. T. is designed for the twist wrapping of irregular shaped candies.

- Equipped with a patented automatic feed.
- Self-lubrication throughout, oil being sprayed by a pump and filter to the various movements.

ROSE F. W. T. TRIUMPH

Form, Cut, Fold or Twist Wrapping Machine

Output: 650 pieces per minute on twist
550 pieces per minute on fold

The Rose Triumph is designed for the high speed production of twist or fold wrapped pieces showing the cut side through the wrapper. The wrapper may be cellophane, wax paper, wax-backed foil, with or without understrip.

Designed for today's *jet-speed* production requirements...

ROSE

Now is the time . . . in this keen competitive market . . . for you to install these advanced high speed wrapping machines so that you will be able to derive the benefits and profits from their high speed and lower cost per unit production.

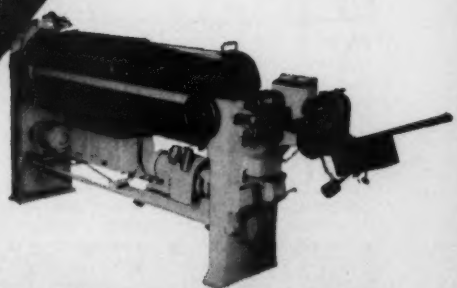
The Rose family of high speed wrapping machines were specially designed to fulfill today's relentless demand for highest speed production together with lower labor costs, and to produce the modern "eye appealing" wrap necessary for supermarket type of merchandising.

ROSE F. W. T.,

rm, Cut and Twist rapping Machine

put: pieces per minute

The Rose F. W. T. is designed for forming, cutting and twist wrapping rectangular or cylindrical shaped toffees and hard candies in cellophane or wax paper, with and without an understrip or, wax paper with an overstrip.



ROSE Type 4 B. R. F. PLASTIC TOFFEE AND HARD CANDY BATCH ROLLER AND FEEDER

e can do any le of wrapping.

Tell us your equirements end us samples your candies.

mplete details ptly submitted.

NATIONAL

EQUIPMENT CORPORATION

ROSE MACHINERY DIVISION

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167 North May Street
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THE MANUFACTURING CONFECTIONER'S CLEARING HOUSE

Address replies to box number, c/o The Manufacturing Confectioner
418 N. Austin Blvd., Oak Park, Illinois

MACHINERY FOR SALE

FOR SALE

Bonus Cluster Machine
Model S # 3 Savage Fire Mixers.
20 gal. & 50 gal. Model F-6 Savage Tilting Mixers, copper kettle.
200 lb. Savage Oval Top Marshmallow Beaters.
Cut-Rol Cream Center Machines.
Triumph Candy Depositor
Bostonian Friend Hand Roll Machine
50" two cylinder Werner Beater.
1000 lb. Werner Syrup Cooler.
150 lb. to 500 lb. Chocolate Melters
24" and 32" N.E. Enrobers.
Simplex Gas Vacuum Cooker.
Simplex Steam Vacuum Cooker.
Savage Cream Vacuum Cooker.
600 lb. Continuous Vacuum Cooker.
Form 3 Hildreth Pullers.
6' and 7' York Batch Rollers.
National Wood Starch Buck.
National Steel Starch Buck
Bausman Twin Disc Refiner Unit.
Ball and Dayton Cream Beaters.
30 Gal. Stainless draw off steam jacketed kettles.
350 lb. cap. Resco chocolate melting and tempering kettle.
Savage and Racine Caramel Cutters
We guarantee completely rebuilt.

SAVAGE BROS. CO.
2636 Gladys Ave. Chicago 12, Ill.

Latini supplementary steamer; Simplex steam cooker; Carle & Montanari 4-stage sizer; Transwrap "A" with electric eye, twin tube volumetric; Racine EP sucker machine; Wrap-Ade pop wrapper. Box 1196, The MANUFACTURING CONFECTIONER.

Hayssen 5-9 wrapper; Simplex gas fire cooker; Bausman quadruple chocolate grinding & mixing unit; Werner twin cream beater, motor; FA2-Q wrapper; Triangle triple-spout bag weigher; Hayssen 7-17 wrapper. Box 1197, The MANUFACTURING CONFECTIONER.

Smith enrober, 10 inch. Will sacrifice. Complete with enrober and tunnel. In operation at present. Philadelphia area. Box 1194, The MANUFACTURING CONFECTIONER.

WIRE FORMS: RACKS
WIRE DISPLAYS:
Made to Specifications
LOW PRICES WRITE
Fosform Wire Division
6171 Carnegie Ave. • Cleveland 3, Ohio

Hohberger continuous cooker (2000 lbs. per hour); Racine stick machine; Instant Fondant machine, latest type; PB Lynch wrapper with eye, magazine feed; GD twist wrapper. Box 1195, The MANUFACTURING CONFECTIONER.

3 new Greer 500# steel water jacketed melting kettles complete with gear head motor drive, standby electric emersion heaters. Will sell individually or in lot at reduced prices. Box 1191, The MANUFACTURING CONFECTIONER.

2 new Greer 16" automatic feeders complete with individual variable speed drive for shaker bars, feed board, belt and three sets of aligning bars. Bargain priced. Box 1192, The MANUFACTURING CONFECTIONER.

For sale: Simplex gas-fired vacuum cooker; 3 ft., 4 ft., 5 ft. cream beaters: 50 to 300 lb. chocolate melters; gas stoves; cut roll cream center machines; pulling machines; York batch rollers; steam jacketed agitating kettles; water cooled slabs; marbles; Hobart & Reed vertical beaters; copper kettles; guillotine caramel cutting machine and other items. You will find it worth while to check our prices first. S. Z. Candy Machinery Co., 1140 N. American St., Philadelphia, Pa.

SITUATION WANTED

Esq. available to take charge of chewing gum base department and general candy pan line. To this I will add that I have my own formula for synthetic chichly gum base which took me five years of research work. Also I will go in foreign countries to teach all this. Box 1286, The MANUFACTURING CONFECTIONER.

MACHINERY WANTED

Used lollypop wrappers and older models sucker machines. State age, condition and price. Box 1198, The MANUFACTURING CONFECTIONER.

COCOA CAKE
COCOA POWDER
COCOA BUTTER
Buy or Sell
Woodward & Dickerson
1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA.
PHONE: LOcust 4-5600; TELETYPE PH109

LINES WANTED

Past 23 years representing Peter Paul, Sweets Co. of America, Smith Bros. Cough Drops, H. B. Reese Candy Co. in Chicago, Milwaukee and northern Illinois territory to all classes of trade who buy confections. Commission preferred. Les Netterstrom, 3315 N. New England Ave., Chicago 34, Ill., Kildare 5-8110.

MISCELLANEOUS

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Brokers wanted. Now taking applications for all territories, brand new line of lollypops available after January first. If you do not have a pop line and are looking for something different, your replies will be considered and held in strict confidence. Pops Galore Co., 118 South Akard, Dallas, Texas.

Classified Rates

Lightface type — 10¢ per word
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Classified display advertising is charged at the rate of $8.00 per column inch for less than ¼ page. Column is 13 picas. ¼ page and over charged at regular advertising rates.

WILL BUY. . .

Any kind of inedible cocoa residues, such as cocoa shells, cocoa dust, expeller cake, powder, coating, liquor, butter, or any fat-containing material.

(ESTABLISHED 1873)

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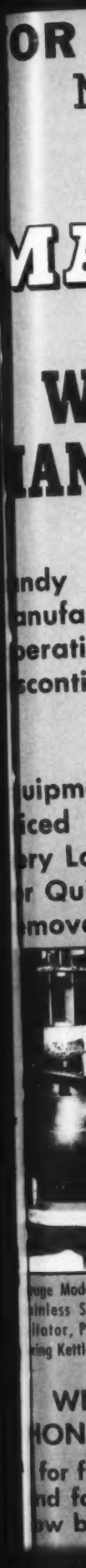

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Modern, Late style

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direct from floors of

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located in Ohio

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This M-100 Mogul is just like new, having been operated as a test plant for only a couple of years with only 1,000 trays available – by an AAA1 food company.

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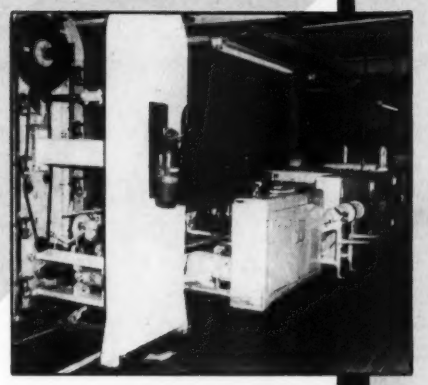
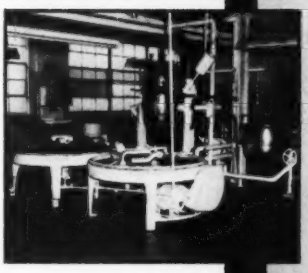
- Equipment was well maintained and is in excellent operating condition.
- These offerings are subject to prior sale.



1956 Heavy Duty, Streamlined National Equipment M-100 Mogul, with D-100 Depositor, Stainless Steel Hopper, Hydro-Seal Silvertone Pump Bars, Candy Conveyor, and with Currie Continuous Starch Cleaner.

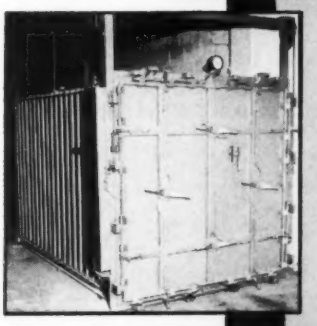


Simplex two-way tilt Copper High Dome Steam Vacuum Cooker

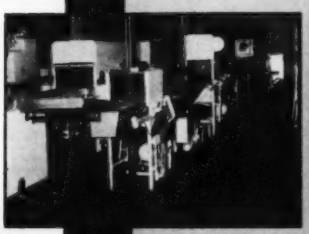
2-Ball 5 ft. Cream Beaters with motors.

Stainless Steel Steam Jacketed Dump Cooking Kettle.

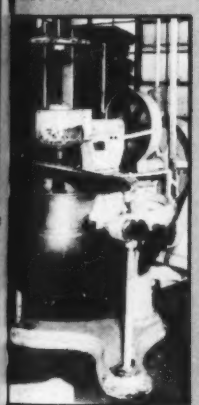
Hayssen Model 66L Wrapper, Serial No. 12170, less than 1 year old.



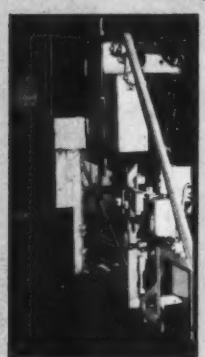
Walter Haertel Co. No. 214 Fumigating Chamber for 6,000 lbs. of nuts.



W. C. Smith 10 inch Enrober, Feeding Conveyor and Bottomer and 30 ft. Cooling Tunnel.



…uge Model F-6 50-gal.
…inless Steel, Double
…itator, Patent Tilting
…ing Kettle.



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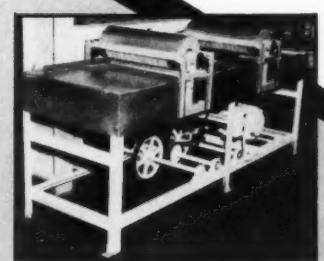

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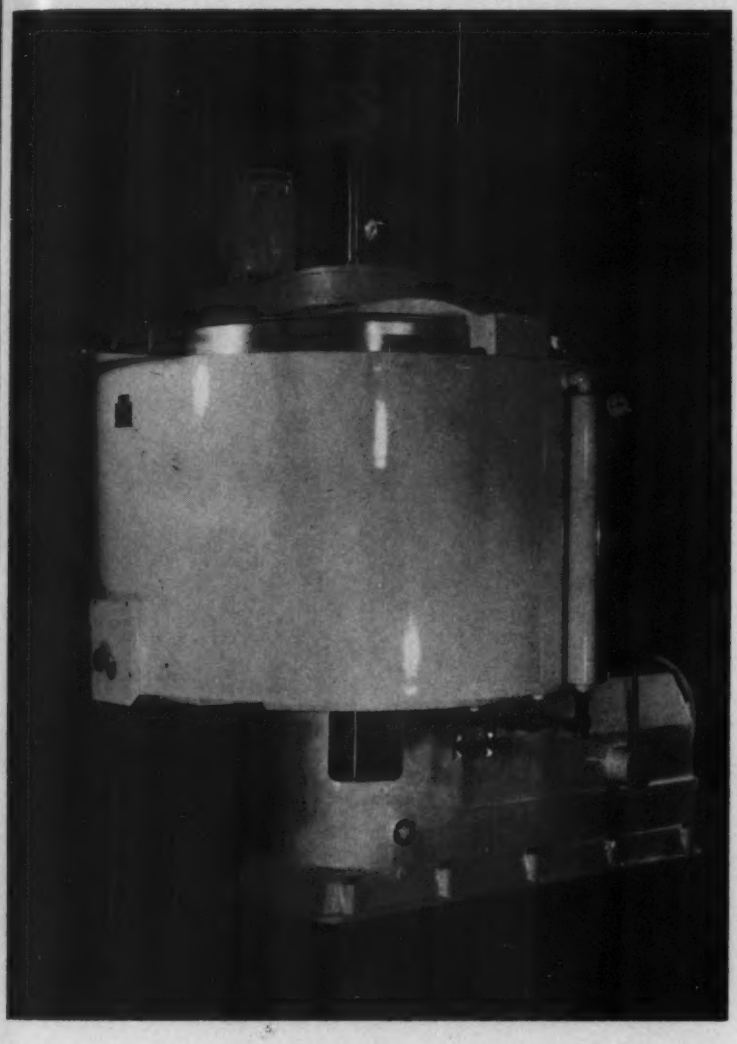

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Valley Fresh

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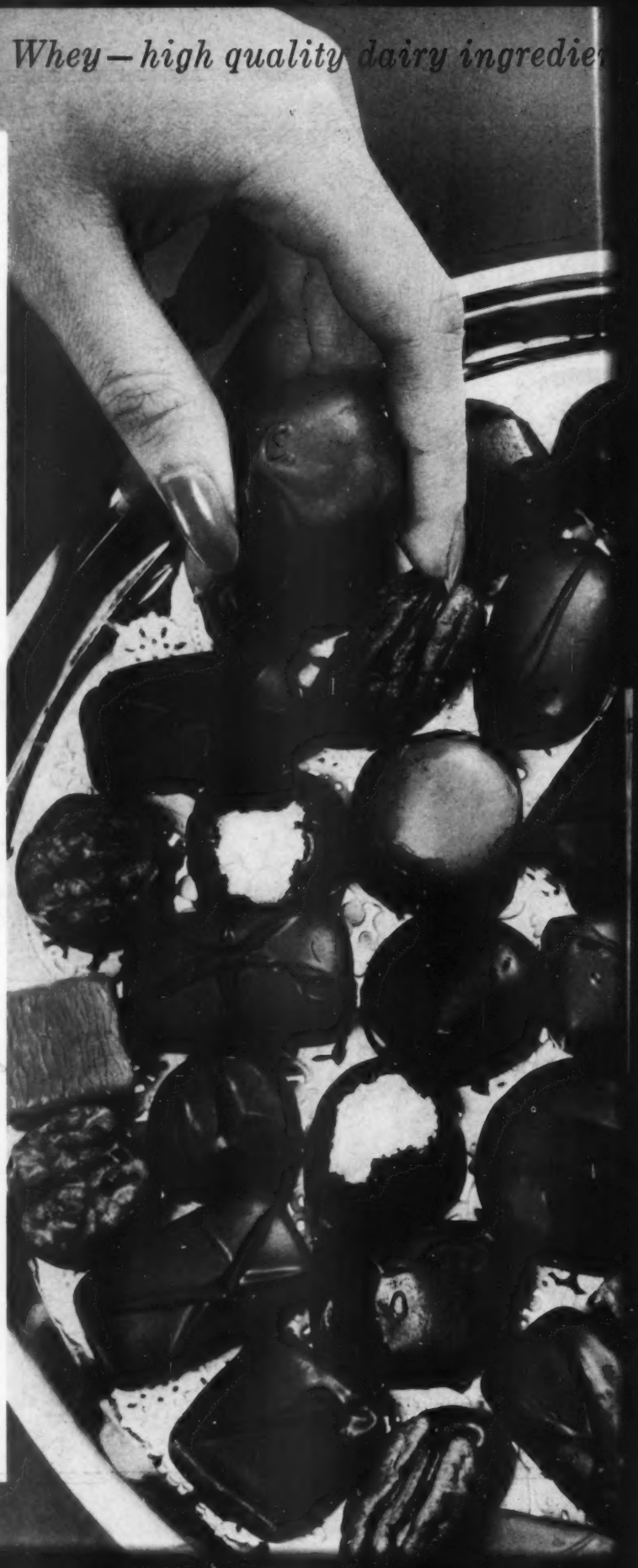
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